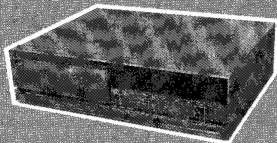


# TOSHIBA

## STEREO CASSETTE DECK

# PC-G90AD



### SPECIFICATIONS

|                                      |  |                           |  |
|--------------------------------------|--|---------------------------|--|
| <b>Heads:</b>                        | Record: Super AP<br>Playback: 12 plate laminated Super AP<br>Erase: AF 1/2 gap ferrite head  | <b>SN Ratio:</b>          | 60 dB (peak level, WTD, chrome position tape)  |
| <b>Drive System:</b>                 | 2-motor IC logic control   | <b>Total Distortion:</b>  | 0.5% (400 Hz, 0 dB chrome position tape)   |
| <b>Motors:</b>                       | DC servo motor for capstan drive<br>DC motor for reel drive<br>DC motor for control  | <b>Bias Frequency:</b>    | 85 kHz   |
| <b>Tape Speed:</b>                   | 4.8 cm/sec.  | <b>Input Terminals:</b>   | MIC: 0.25mV (500 ohm — 10k ohm)<br>LINE: 70mV (50k ohm)                                    |
| <b>Wow &amp; Flutter:</b>            | 0.022% WRMS, $\pm 0.06\%$ DIN  | <b>Output Terminals:</b>  | LINE: 0.4V (50k ohm)<br>Headphones: 1mV (8 ohm)  |
| <b>Fast Forward and Rewind Time:</b> | Approx. 75 sec. (C-60 tape)  | <b>Power Supply:</b>      | AC 220V $\sim$ , 50 Hz (for Europe)<br>AC 240V $\sim$ , 50 Hz (for the U.K. and Australia) |
| <b>Frequency Response:</b>           | 20 — 21,000 Hz with metal tape and $-20$ dB input<br>20 — 20,000 Hz with chrome position tape and $-20$ dB input<br>20 — 18,000 Hz with normal tape and $-20$ dB input | <b>Power Consumption:</b> | 32W  |
|                                      |  | <b>Major Dimensions:</b>  | 420(W) x 120(H) x 321(D) mm (including front panel knobs, etc. and rubber supports)        |
|                                      |  | <b>Weight:</b>            | 6.7 kg   |

Specifications are subject to change without notice.

TE, TU

PRINTED IN JAPAN 22905183 March, 1983

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## 1. BLOCK DIAGRAM

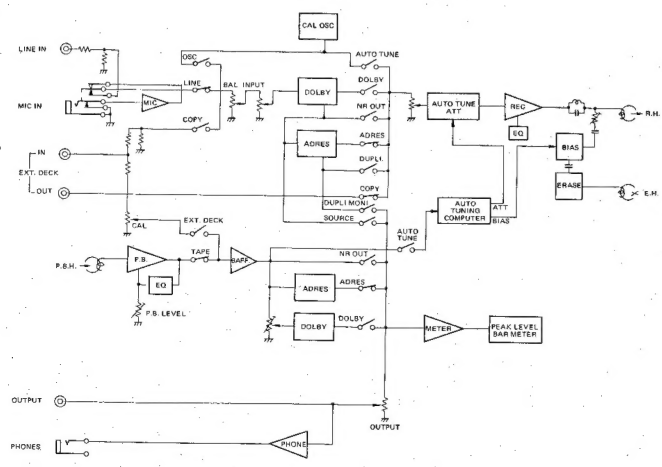


Figure 1

## 2. OPERATING CONTROLS

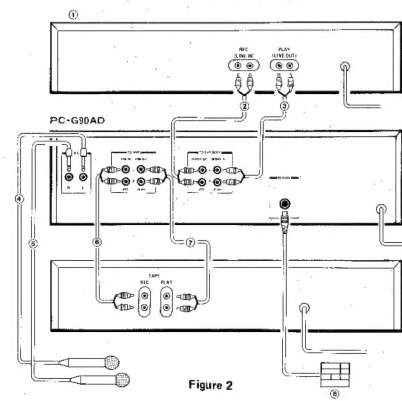
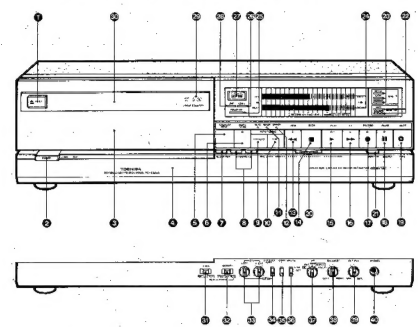


Figure 2

### FEATURES

- **DD Motor Driven Closed Loop Dual Capstan System**  
Both capstans are driven by separate low-speed DD motors to greatly improve the drive system for high performance in tape travel. The wow & flutter rating in this "simply & silent" mechanism is only 0.022% WRMS.
- **New "Double Gates" IC**  
With further improvements to the dynamic characteristics gained by incorporating a "variable attack" type level sensor, the **Dolby** NR system developed by Toshiba has now been adapted to comply with digital requirements while maintaining full compatibility with conventional **Dolby** NR systems.
- **New Super-AP Three Head Configuration**

### ■ Computerized Auto Tape Tuning System

Optimum bias and sensitivity are adjusted automatically by built-in computer.

### ■ **[LOCK]** Unit Function (with Copy Switch)

The PC-G90AD also includes a four-channel **[LOCK]** unit function. This also enables the PC-G90AD to be used as an **[LOCK]** unit in connection with other tape decks. With the second deck connected to the unit terminals, pressing the COPY switch enables direct tape dubbing from the other deck.

## FRONT PANEL CONTROLS

### ① **[▲ EJECT]** Button

#### ② **[POWER]** Switch

The peak level meter, the cassette compartment lamp, and the AUTO indicator come on when the **[POWER]** switch is pressed ON. Note that no tape operations are possible during the first five seconds after the power is switched on. Press the switch a second time to switch off.

#### ③ **Cassette Compartment Door**

Open by pushing downwards on both sides.

#### ④ **[COUNTER RESET]** Switch

For resetting the linear counter to 0:00.

#### ⑤ **[INDEX SCAN]** Switch

When this switch is pressed during playback mode, the tape is advanced to the start of the next tune in fast forward mode. The tape then advances in fast forward mode to the start of the next tune after that, and again plays about 10 seconds of the tune, and so on to the end of the tape. If playback of the whole of a particular tune is desired, simply press the playback button.

#### ⑦ **[BLOCK REP.] (Block Repeat)** Switch

When this switch is pressed ON for the block repeat function, B is displayed in the counter (see page 9 for further details).

#### ⑧ **[1-MEMO-2]** Block Repeat

When the block repeat function is used, 1-MEMO is the memory position for automatic playback, and 2-MEMO the memory position for automatic rewind.

#### ⑨ and ⑩ **[AUTO TUNING]**

#### ⑨ **[FIX/AUTO]**

Press once for AUTO (whereupon the AUTO indicator comes on), and press again for FIX (normal status).

#### ⑩ **[START]**

Press this button for automatic tape bias and sensitivity adjustments (which take 10 to 15 seconds).

### ■ Direct-Coupled Dual FET Input Head Amplifier

### ■ Easy-to-read Fluorescent Tube Level Meter

### ■ Linear Electronic Counter (with Block Repeat Function)

Based on the basis of the rotational speed of both reels, the tape travel time is computed and displayed by micro-computer.

### ■ MOSS, Index Scan, and Memory Counter Functions

#### ① **[READY]**

Blinks on and off during tape tuning operation, and remains on to indicate previous presetting in memory.

#### ② **[ERROR]** Indicator Lamp

Comes on if an error occurs during auto tape tuning.

#### Tape Mode Control Buttons (③ thru ⑩)

##### ③ **[◀ REW.] (Rewind)** Button

##### ④ **[▶ PLAY]** Button

##### ⑤ **[▶▶ FF.] (Fast Forward)** Button

##### ⑥ **[● RECORD]** Button

Recording mode is set by pressing this button together with the **[▶ PLAY]** button. And if the **[|| PAUSE]** button is pressed while pressing this **[● RECORD]** button, the deck is put into recording standby mode.

Note that recording mode cannot be set when no cassette tape has been loaded, and when the erasure prevention tabs have been removed.

##### ⑦ **[■ PAUSE]** Button

When this button is pressed during playback or recording mode, the tape is halted temporarily in that mode. This pause state is released by pressing the **[▶ PLAY]** button.

##### ⑧ **[○ MUTE] (Recording Mute)** Button

Used to from five second intervals of blank tape. Recording mute mode is switched automatically to pause mode after five seconds.

##### ⑨ **[INPUT LEVEL]** Adjustment Control

For adjusting the input level. Left/right balance is adjusted by the **[BALANCE]** control in the subcontrol panel.

##### ⑩ **[MONITOR]** Switch

Switch for selecting the monitor (output) signal.

##### < **[SOURCE]** >

Position for monitoring the input (recording) signal applied to this tape deck.

##### < **[TAPE]** >

Position for monitoring recorded signals (playback program). Recording performance can be monitored simultaneously in this position.

#### ⑪ **[SOURCE/TAPE]** Monitor Indicator Lamps

#### ⑫ **[NORMAL/CrO<sub>2</sub> (Chrome)/METAL]** Tape Indicator Lamps

#### ⑬ **Level Meter**

Peak level display of the input signal to be recorded, and the level of signals recorded on tape.

#### ⑭ **[DOLBY\* NR]** Indicator Lamp

#### ⑮ **[COPY]** Indicator Lamp

#### ⑯ **[LOCK]** Indicator Lamp

#### ⑰ **[UNIT]** Indicator Lamp

#### ⑱ **[LINEAR COUNTER]**

This time counter increases in one second steps. In rewind and fast forward modes, too, the time corresponding to the playback mode time is displayed. The display includes two digits for minutes, and two digits for seconds.

< **B** > Block repeat

< **1** > Memory 1

< **2** > Memory 2

#### ⑲ **Cassette Compartment Lamp**

This lamp enables easy check of the remaining amount of tape.

#### ⑳ **[TIMER]** Standby Switch

Switch for preset recording and morning alarm playback when an optional audio timer is used, and also automatic repeated playback. The switch is normally left in the OFF position.

#### ㉑ **[MEMORY]** Counter Switch

Switch used for automatic stopping of the tape when counter is rewound to 0:00, followed by automatic start of playback mode from that position. Also used for automatic repeated playback. (The counter may not always stop exactly at 0:00.)

#### ㉒ **[CAL.] (Calibration)** Control

Control for adjusting to the **[LOCK]** reference level when the deck is used as an **[LOCK]** unit. The control is not used when the PC-G90AD is operated in recording or playback mode.

#### ㉓ **[EXT DECK (UNIT)]** **[LOCK]** Unit Switch

Used in **[LOCK]** recording or playback mode with an another cassette tape deck.

#### ㉔ **[COPY]** Switch

Used when recording from another tape deck.

#### ㉕ **[MPX FIL.] (MPX Filter)** Switch

Used when recording FM stereo broadcasts or TV multiplex programmes.

#### ㉖ **NR Noise Reduction Switch**

< **NR** > **DOLBY\* NR**

Set to this position for Dolby NR recording and playback.

< **OUT** >

Set to this position when not using any noise reduction system.

< **[LOCK]** >

Set to this position for **[LOCK]** recording and playback.

In this position, the epoch-making automatic dynamic range expansion system capable of recording and playback of fresh, natural sounds with practically negligible tape hiss across the entire frequency spectrum is switched on.

The **[LOCK]** indicator lamp comes on in this position.

#### < **DUPLI** > **[LOCK]** (Duplicator) Switch

Switch used to enable monitoring of normal sounds during tape dubbing of **[LOCK]** encoded tapes from another tape deck.

#### < **OSC** > **Built-in Oscillator (Signal Generator)**

Set to this position for level adjustment when recording with **[LOCK]** NR in another tape deck.

#### ㉗ **[BALANCE]** Adjustment Control

Left/right adjustment of input level.

#### ㉘ **[OUTPUT]** Level Adjustment Control

Adjustment of the output (monitor) level of the playback signal from this tape deck. The headphones level is also adjusted at the same time.

#### ㉙ **[PHONES]** (Headphones) Jack

\* Noise reduction system manufactured under license from Dolby Laboratories Licensing Corporation. "Dolby" and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.

## CONNECTIONS

Make sure that each cable is connected to the correct terminal, and that all connections are made securely.

- Make sure that the power switches of all components are off before making any connections.
- Make doubly sure that there are no loose connections anywhere since these can easily give rise to unwanted noise.
- Use the red plug for the right channel.
- When connecting to the other tape deck, use the connecting cables supplied with that deck.

① Another tape deck (external deck).

② Connecting cable for recording (supplied with other tape deck, or purchased separately).

③ Connecting cable for playback (also supplied with other tape deck, or purchased separately).

④ Left channel microphone (optional).

⑤ Right channel microphone (optional).

⑥ Connecting cable for recording.

⑦ Connecting cable for playback.

⑧ RM-20S (optional).

## AUTO TAPE SELECTION AND AUTO TAPE TUNING (ATTS)

The PC-G90AD is designed to detect tape type (normal, chrome, or metal), and set bias and equalization levels automatically when the cassette tape is loaded. (The results are displayed immediately by the respective indicator lamps. Note, however, that detection may not

be possible if an old-type tape is used.) The deck also features an auto tuning mechanism which automatically sets the optimum bias and sensitivity for each type of tape. This mechanism is incorporated in a special microcomputer.

**Operation** Note: Set to FIX when not recording.

### ■ Input of New Data

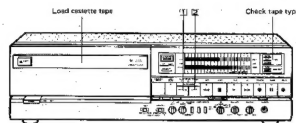


Figure 3

### ● Load the tape and check the type of tape.

- [1] Press **FIX/AUTO** — The [AUTO] indicator lamp comes on. (This lamp comes on when the [POWER] switch is switched ON, and if the [READY] indicator lamp also comes on at that time, it shows that data has already been stored in memory.)
- [2] ATTS start: Press **START** — The [READY] indicator lamp lights up (indicating that the ATTS signal is being recorded).
- [3] ATTS end: **STOP** → **REW** → **STOP** — If the [READY] indicator comes on,
  - tape characteristics data obtained by ATTS operation is stored in memory by microcomputer.
  - since separate memories are available for each type of tape (NORM, CrO<sub>2</sub>, and METAL), characteristics data for each type can be stored in memory.
 If the [ERROR] indicator lamp comes on, either repeat the ATTS operation, or exchange with another cassette tape.

### ■ Use of Data already Stored in Memory

After checking that both the [AUTO] and [READY] indicator lamps are on, proceed with normal recording mode operation.

### ■ When [FIX/AUTO] switch is set to FIX

The [AUTO] and [READY] indicator lamps do not come on. Fixed bias and sensitivity levels are set according to the type of tape detected by the auto tape selector.

- Note:**
1. If non-standard tapes or tapes of poor sensitivity are used, an accurate output cannot be obtained. The ATTS operation is cancelled automatically, and the [ERROR] indicator lamp comes on.
  2. If the [POWER] switch, an operation mode button, or any other switch is operated during ATTS operation, the ATTS operation is cancelled automatically.
  3. If the ATTS operation is started near the end of the tape, and the end is subsequently reached before completion of the ATTS operation, the auto stop mechanism is activated and the ATTS operation is cancelled.
  4. If a second ATTS operation is performed, the tape characteristics data of the first operation is cleared from memory, and the new data is stored instead.
  5. If the tape selector switch fails to operate correctly due to the absence of a detector hole, use another tape.
  6. Since the memory contents are preserved for about one day after the power is switched off, the ATTS function can also be used in timer recording.
  7. Leave the [FIX/AUTO] switch in the FIX position when not using the ATTS function.
  8. If the [READY] indicator lamp is off with the [AUTO] indicator lamp on, the bias and sensitivity values will be fixed values.

## LINEAR ELECTRONIC COUNTER

The linear electronic counter featured in the PC-G90AD displays tape travel time (during playback rewind, and fast forward modes) in minutes and seconds in digital mode. This counter can be used in two different ways.

### ■ Display of Tape Travel Time

During playback, rewind, and fast forward modes, tape travel is counted (timed) in minutes and seconds. If the tape is stopped or put into pause mode, the counter also stops. During fast forward and rewind modes, the time corresponding to the length of tape (and equivalent to the playback mode time) is displayed.

- Press the [COUNTER RESET] switch ④ at the beginning of the tape (but do not overlook the leader tape).

### ■ Display of Remaining Time

If the time of the whole tape is displayed as a minus value, the remaining amount of time is shown. This is particularly helpful in recording mode.

- Press the [ ] FF button ① to advance the tape to the end, and then press the [COUNTER RESET] switch ④. (Also remember that there is leader tape at the end of the tape.) Next press the [ ] REW button ② to rewind the tape back to the beginning where the counter will display a minus reading. (A display of -30:00 indicates that there is 30 minutes of tape left.)

When recording is started, the counter will proceed to count down. For example, -30:00, -29:59, -29:58, ... thereby showing the remaining amount of time at all times.

### Caution:

#### Counter Precision

- This linear electronic counter is not a clock, and small differences in the displayed time do occur. (The times displayed in playback mode differ slightly from the times displayed in fast forward and rewind modes.)
- This difference varies with different tape types. (Variation also occurs between tapes of the same kind.) The counter has been standardized for C-60 and C-90 tapes. With shorter tapes or tapes with a larger hub diameter, there will be differences from the actual time.
- Although the counter counts in units of seconds, the counting rate may speed up or slow down marginally at times to compensate the counting.

### Counter Display

- The counter display also includes MEMO, B, 1, and 2 function displays.

(See page 9 for details on block repeat.)

- Note:**
1. Block repeat operation is not possible with minus displays. Always reset the counter at the beginning for block repeat.
  2. The 1 and 2 displays cannot be erased when the display is a minus value.
  3. To erase the MEMO, 1, and 2 displays, either press the [COUNTER RESET] switch ④, or press the [1-MEMO 2] switch ③ when the B display is disappearing.

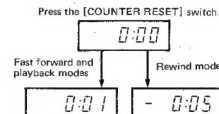


Figure 4

- When rewinding from 0:00, the counter display changes to -0:01, -0:02 and so on.

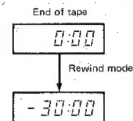


Figure 5

- This method enables the differences in recording times between tapes of different type, length, and brand etc. to be better controlled.

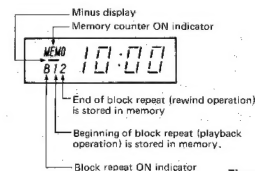
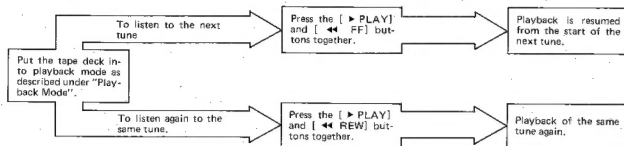


Figure 6

## AUTOMATIC TUNE SELECTION (MOSS, INDEX SCAN)

## ■ MOSS

- The Music Quick Selector System (MOSS) is used, in playback mode, to automatically locate the start of tunes and enables immediate playback of a particular tune. Thus you can either playback the same tune or proceed to the next tune. The operating procedure is outlined below.



**Note:** The MOSS feature does not function if:-

- The blank portion of tape between tunes is less than 5 seconds.
- There is noise in the blank portion of tape.
- There are very quiet passages or long pauses within the tune.
- The recording level is too low.
- The fast forward or rewind button is pressed accidentally before pressing the MOSS switch. In this case, the deck will operate in normal fast forward or rewind mode.
- If the [▶ PLAY] and [◀ REW] buttons are pressed soon after the start of a tune, or if the [▶ PLAY] and [▶ FF] buttons are pressed near the end of a tune, a whole tune is skipped and playback commences from the next tune (in either direction) after that.

Figure 7

## ■ Index Scan Playback

If the [INDEX SCAN] switch ② is pressed during playback mode, the INDEX SCAN indicator lamp comes on, the tape is rewound to the beginning of the recorded program, and playback is resumed for about 10 seconds at that position. The tape then advances to the beginning of each tune in fast forward mode, and automatic

ally plays the first 10 seconds of each tune. If the [▶ PLAY] button ① pressed during one of these 10 second playback periods, the index scan function is cancelled and normal playback mode is resumed. To stop index scanning, simply press the [STOP] button ④.

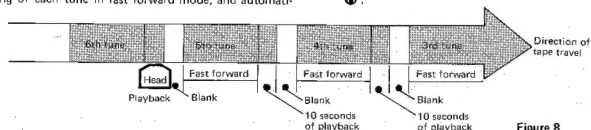


Figure 8

## ■ Preparation of Tape for Automatic Tune Selection

(Use of the Auto Mute Button)

Unrecorded sections of a tape are formed in the following way during recording mode to prepare tapes for automatic tune selection.

- Press the [● MUTE] button ⑩ at the end of the tune being recorded (and release the button again immediately). Approximately five seconds of blank tape is formed, the deck being switched automatically to pause mode (recording standby with the [II PAUSE] button ⑧ indicator lamp on) at the end of the five seconds.

(The [▶ PLAY] button ① indicator lamp blinks on and off during this recording mute mode.)

**Note:** Leave the [MONITOR] switch ② in the < SOURCE > position to enable the source programme to be monitored. (The source programme cannot be monitored in the [MONITOR] switch is in the < TAPE > position.)

- To form a portion of unrecorded tape of more than five seconds, keep the [● MUTE] button ⑩ depressed.
- To form a portion of unrecorded tape of less than five seconds, press the [II PAUSE] button ⑧ at the desired time after pressing the [● MUTE] button ⑩.

## AUTOMATIC PLAYBACK

The PC-G90AD is capable of various automatic playback operations, these being set by combination of repeat switch, memory switch, and block repeat switch. (Always switch the relevant switches off after the end of the respective operations.)

| Tape travel mode            | [TIMER] switch ① | [MEMORY] switch ② | [BLOCK REP] switch ③ [1-MEMO-2] switch ④          | Operation mode button pressed after switch setting |
|-----------------------------|------------------|-------------------|---|--|
| Memory stop<br>             | OFF              | STOP              | Note: Turn the block repeat ON display < B > off. | REW button   |
| Memory play<br>             | OFF              | PLAY              | Note: Turn the block repeat ON display < B > off. | REW button   |
| Auto rewind stop<br>        | PLAY             | OFF               | Note: Turn the block repeat ON display < B > off. | PLAY button  |
| Auto rewind memory stop<br> | PLAY             | STOP              | Note: Turn the block repeat ON display < B > off. | PLAY button  |
| Memory repeat<br>           | PLAY             | PLAY              | Note: Turn the block repeat ON display < B > off. | REW (or PLAY) button                               |
|                             | OFF              | OFF               | Note: The block repeat ON display comes on.       |  |
| Block repeat I<br>          | PLAY             | PLAY              |   | REW (or PLAY) button                               |
| Block repeat II<br>         | PLAY             | PLAY              |   | REW (or PLAY) button                               |
| Block repeat III<br>        | PLAY             | OFF               |   | REW (or PLAY) button                               |

S : Tape start  
E : Tape end  
C : Counter zero display (note)

B<sub>1</sub> : Memory 1 (PLAY at this point)  
B<sub>2</sub> : Memory 2 (REW at this point)

**Note:** The C point may not always be exactly at 0:00.  
[Example: -0:03]

### 3. DISASSEMBLY INSTRUCTIONS

#### CASSETTE COVER REMOVAL

1. Open cassette holder by pushing eject knob.
2. Slide the holder in direction shown by arrow (A), and the holder will be removed.

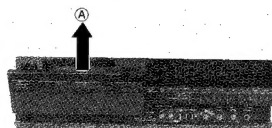


Figure 9

#### TOP COVER REMOVAL

1. Remove six screws (B), (C), (D), and top cover will be removed.

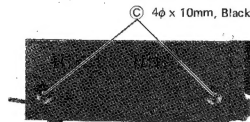


Figure 10

#### FRONT PANEL ASS'Y REMOVAL WITH MECHA. & P.C. BOARD

1. Remove six screws (E), (F), (G), and front panel assembly will be removed.



Figure 14

#### BOTTOM PLATE REMOVAL

1. Remove seven screws (H) and bottom plate will be removed.

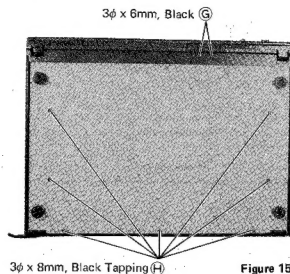


Figure 15

4φ x 10mm, Black (B)

3φ x 8mm, Tapping (Black) (D)

3φ x 8mm, Tapping (E)

3φ x 6mm, Black (G)

3φ x 8mm, Black Tapping (H)

#### ACCESS TO NR (Noise Reduction) P.C. BOARD

1. Remove two screws (I) and open the P.C. Board and hold it with P.C. Board holder for your convenience in servicing.

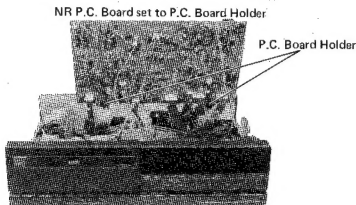


Figure 17

#### METER P.C. BOARD REMOVAL

1. Remove NR P.C. Board, and remove two screws (J).
2. Remove two screws (K) and remove key board switch connector P.C. Board.
3. Remove one screw (L) at center of Meter P.C. Board, and the P.C. Board can be removed.

**Note:** Before removing P.C. Board, always remove two counter securing screws (M) to prevent the counter from damage which may be caused by the P.C. Board touched to the counter.

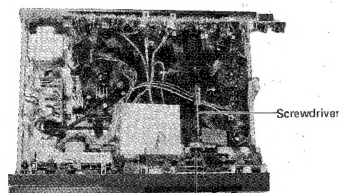


Figure 19

3φ x 10mm, Tapping Screw (Red) (L)  
(Tip of screwdriver)

#### MECHANISM ASSEMBLY REMOVAL

1. Remove four screws (N) (O), and mechanism assembly will be removed.

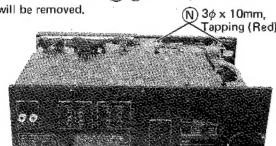


Figure 21

3φ x 10mm, Tapping (Red) (N)

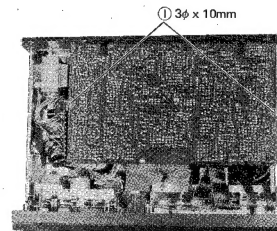


Figure 16

3φ x 10mm, Tapping (Red) (J)

3φ x 8mm, Tapping (M)

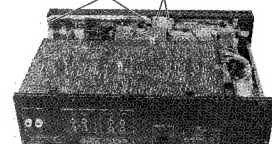


Figure 18

3φ x 8mm, Tapping (K)

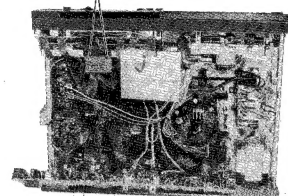


Figure 20

3φ x 10mm, Tapping (Red) (O)

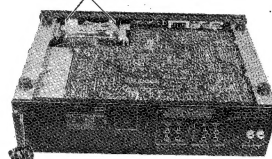


Figure 22

## 4. ADJUSTING PARTS LOCATION

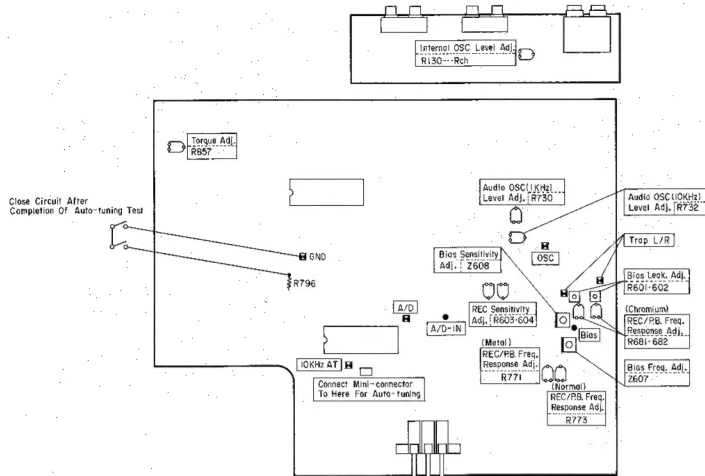


Figure 23

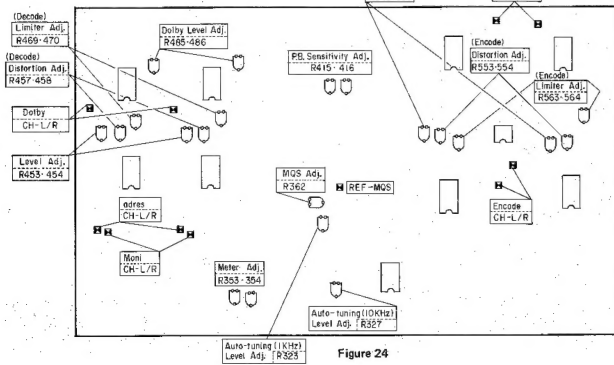


Figure 24

## 5. ADJUSTMENT

| No | Item   | Nominal Specs   | Test Tape   | Volume Control |     |                  | Switch Position |       |          |      |     |  | Adjustment Position |
|----|--|---|-------------|----------------|-----|------------------|-----------------|-------|----------|------|-----|--|---------------------|
|    |  |   |             | REC/BAL        | PB  | CAL              | MONITOR         | NR    | EXT-DECK | COPY | MPX |  |                     |
| 1  | Torque Adjustment                                  | 50 $\pm$ 5g-cm  | Torque Tape | —              | MAX | —                | TAPE            | OUT   | OUT      | OUT  | OUT | R857   |                     |
| 2  | Head Azimuth Adjustment                            | Maximum   | ATT-111     | —              | —   | —                |                 |       |          |      |     | Head Azimuth Adjustment Screw                  |                     |
| 3  | Tape Speed Measurement                             | 3000 $\pm$ 30 Hz  | ATT-111     | —              | —   | —                |                 |       |          |      |     | (Semi-fixed resistor on the Mecha. P.C. Board) |                     |
| 4  | Playback Sensitivity Adjustment                    | 580 $\pm$ 10mV  | ATT-150     | —              | —   | —                |                 | ↓     | ↓        |      |     | R415<br>R416                                   |                     |
| 5  | DOLBY DECODE Adjustment                            |   |             |                |     |                  |                 |       |          |      |     |  |                     |
| ①  | Input Level Adjustment                             | 580 $\pm$ 10mV  | —           | —              | —   | Adjust.          |                 | OUT   | IN       |      |     | CAL Volume                                     |                     |
| ②  | DECODE Level Adjustment                            | 580 $\pm$ 10mV  | —           | —              | —   | Adjust. Position |                 | DOLBY |          |      |     | R485<br>R486                                   |                     |
| 6  | Address DECODE Adjustment                          |   |             |                |     |                  |                 |       |          |      |     |  |                     |
| ①  | Input Level Adjustment                             | 300 $\pm$ 10mV  | —           | —              | —   | —                |                 | —     | —        |      |     | (CAL Volume)                                   |                     |
| ②  | DECODE Level Adjustment                            | 300 $\pm$ 10mV  | —           | —              | —   | —                |                 | —     | —        |      |     | R453<br>R454                                   |                     |
| ③  | DECODE Distortion Adjustment                       | Less than 0.12%   | —           | —              | —   | —                |                 | —     | —        |      |     | R457<br>R458                                   |                     |
| ④  | DECODE Limiter Adjustment                          | + 2 $\pm$ 0.2 dB  | —           | —              | —   | —                |                 | —     | —        |      |     | R469<br>R470                                   |                     |
| 7  | Meter Adjustment                                   | <span style="border: 1px solid black; padding: 0 2px;">AD</span> mark | —           | —              | —   | —                |                 | —     | —        |      |     | R353<br>R354                                   |                     |
| 8  | Playback Frequency Measurement (normal)            | 0 $\pm$ 2 dB  | ATT-255     | —              | —   | —                |                 | OUT   | OUT      |      |     | —  |                     |
| 9  | Playback Frequency Measurement (CrO <sub>2</sub> ) | -4 $\pm$ 2 dB   | ATT-255     | —              | —   | —                |                 |       |          |      |     | —  |                     |
| 10 | Noise Output Level (normal)                        | Less than 2.5mV   | Tape Blank  | —              | ↓   | —                | ↓               | ↓     | ↓        | ↓    | ↓   | —  |                     |

1. Torque Adjustment

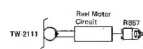


Figure 25

2. Head Azimuth Adjustment



Figure 26

3. Tape Speed Measurement

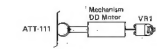


Figure 27

4. Playback Sensitivity Adjustment

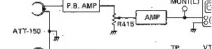


Figure 28

## 5. ADJUSTMENT INSTRUCTIONS

| No | Item   | Nominal Specs    | Test Tape   | Volume Control |     |                  | Switch Position |     |          |      |     | Adjustment Position                            | Test Points            | Input Frequency          | ATT | Remarks   |
|----|--|------------------|-------------|----------------|-----|------------------|-----------------|-----|----------|------|-----|--|------------------------|--------------------------|-----|---|
|    |  |                  |             | REC/BAL        | PB  | CAL              | MONITOR         | NR  | EXT-DECK | COPY | MPX |  |                        |                          |     |   |
| 1  | Torque Adjustment                                  | 50 $\pm$ 5g-cm   | Torque Tape | —              | MAX | —                | TAPE            | OUT | OUT      | OUT  | OUT | R857   | Torque Tape            | —                        | —   |   |
| 2  | Head Azimuth Adjustment                            | Maximum          | ATT-111     | —              | —   | —                |                 |     |          |      |     | Head Azimuth Adjustment Screw                  | MONI or LINE OUT       | —                        | —   | After adjustment, apply a lock paint on the screw.  |
| 3  | Tape Speed Measurement                             | 3000 $\pm$ 30 Hz | ATT-111     | —              | —   | —                |                 |     |          |      |     | (Semi-fixed resistor on the Mecha. P.C. Board) | MONI or LINE OUT       | —                        | —   |   |
| 4  | Playback Sensitivity Adjustment                    | 580 $\pm$ 10mV   | ATT-150     | —              | —   | —                |                 |     |          |      |     | R415<br>R416                                   | MONI (L)<br>MONI (R)   | —                        | —   |   |
| 5  | DOLBY DECODE Adjustment                            |                  |             |                |     |                  |                 |     |          |      |     |  |                        |                          |     |   |
| ①  | Input Level Adjustment                             | 580 $\pm$ 10mV   | —           | —              | —   | Adjust.          |                 |     | OUT      | IN   |     | CAL Volume                                     | MONI (L)<br>MONI (R)   | 400 Hz — 10 dB           | —   |   |
| ②  | DECODE Level Adjustment                            | 580 $\pm$ 10mV   | —           | —              | —   | Adjust. Position |                 |     | DOLBY    |      |     | R485<br>R486                                   | DOLBY (L)<br>DOLBY (R) | 400 Hz — 10 dB           | —   | ① Input terminal $\rightarrow$ EXT-DECK /PLAY   |
| 6  | adres DECODE Adjustment                            |                  |             |                |     |                  |                 |     |          |      |     |  |                        |                          |     | ② Don't touch after completion of adjustment.   |
| ①  | Input Level Adjustment                             | 300 $\pm$ 10mV   | —           | —              | —   | —                |                 |     | —        |      |     | (CAL Volume)                                   | MONI (L)<br>MONI (R)   | 1 kHz — 16.3 dB          | —   | ③ Deck STOP mode  |
| ②  | DECODE Level Adjustment                            | 300 $\pm$ 10mV   | —           | —              | —   | —                |                 |     | —        |      |     | R453<br>R454                                   | adres (L)<br>adres (R) | 1 kHz — 16.3 dB          | —   |   |
| ③  | DECODE Distortion Adjustment                       | Less than 0.12%  | —           | —              | —   | —                |                 |     | —        |      |     | R457<br>R458                                   | adres (L)<br>adres (R) | 1 kHz — 16.3 dB          | —   |   |
| ④  | DECODE Limiter Adjustment                          | +2 $\pm$ 0.2 dB  | —           | —              | —   | —                |                 |     | —        |      |     | R468<br>R470                                   | adres (L)<br>adres (R) | 1 kHz — 10 kHz — 16.3 dB | —   | Variation of 10 kHz referred to 1 kHz   |
| 7  | Meter Adjustment                                   | AD mark.         | —           | —              | —   | —                |                 |     | —        |      |     | R353<br>R354                                   | Meter                  | 1 kHz — 16.3 dB          | —   | (1 dB decreased)<br>White part all turn on $\rightarrow$ start to light up.<br>Red part all turned off. |
| 8  | Playback Frequency Measurement (normal)            | 0 $\pm$ 2 dB     | ATT-255     | —              | —   | —                |                 |     | OUT      | OUT  |     | —  | MONI or LINE OUT       | —                        | —   | 10 kHz level difference referred to 315 Hz level  |
| 9  | Playback Frequency Measurement (CrO <sub>2</sub> ) | -4 $\pm$ 2 dB    | ATT-255     | —              | —   | —                |                 |     | —        |      |     | —  | MONI or LINE OUT       | —                        | —   | Variation from 10 kHz normal  |
| 10 | Noise Output Level (normal)                        | Less than 2.5mV  | Tape Blank  | —              | —   | —                |                 |     | —        |      |     | —  | MONI or LINE OUT       | —                        | —   |   |

1. Torque Adjustment

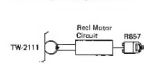


Figure 25

2. Head Azimuth Adjustment

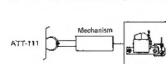


Figure 26

3. Tape Speed Measurement

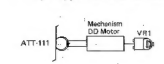


Figure 27

4. Playback Sensitivity Adjustment

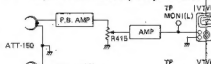


Figure 28

5. DOLBY DECODE Adjustment

① Input Level Adjustment

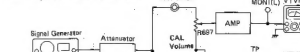


Figure 29

② DECODE Level Adjustment

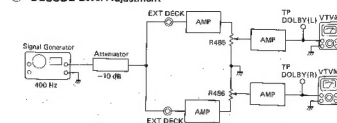


Figure 30

6. adres DECODE Adjustment

① Input Level Adjustment

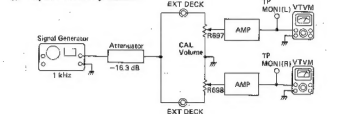


Figure 31

② DECODE Level Adjustment

③ DECODE Distortion Adjustment

④ DECODE Limiter Adjustment

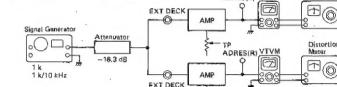


Figure 32

7. Meter Adjustment

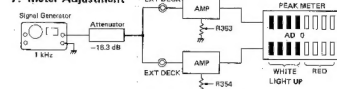


Figure 33

Measurement

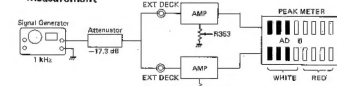


Figure 34

8. Playback Frequency Measurement (normal)

9. Playback Frequency Measurement (CrO<sub>2</sub>)

10. Noise Output Level (normal)

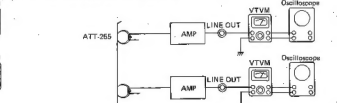


Figure 35

| No | Item  | Nominal Spec       | Test Tape | Volume Control         |     |     | Switch Position |     |          |      |     | Adjustment Position    | Test Points                              | Input Frequency          | ATT | Remarks  |
|----|---|--------------------|-----------|------------------------|-----|-----|-----------------|-----|----------|------|-----|------------------------|--|--------------------------|-----|--|
|    |   |                    |           | REC/BAL                | PB  | CAL | MONITOR         | NR  | EXT-DECK | COPY | MPX |                        |  |                          |     |  |
| 11 | OSC Frequency Adjustment                          | 105 kHz<br>±50 Hz  | AC-711    | —                      | MAX | —   | TAPE            | —   | OUT      | OUT  | OUT | Z607                   | (T.P.)<br>BIAS                           | —                        | —   |  |
| 12 | Bias Sensitivity Adjustment                       | MAX                | AC-711    | —                      | —   | —   | —               | —   | —        | —    | —   | Z608                   | (T.P.)<br>BIAS                           | —                        | —   |  |
| 13 | Bias Trap Adjustment                              | MIN<br>(≤15mV)     | AC-711    | —                      | —   | —   | —               | —   | —        | —    | —   | Z601<br>Z602           | TRAP (L)<br>TRAP (R)                     | —                        | —   |  |
| 14 | MOS Adjustment                                    | DC 1.8±0.1V        | —         | —                      | —   | —   | —               | —   | —        | —    | —   | R362                   | REF-MOS                                  | —                        | —   |  |
| 15 | Built-in OSC level Adjustment                     | 300 ±10mV          | —         | Adjustment<br>/Center  | —   | —   | —               | OSC | —        | —    | —   | REC-VR→LCH<br>R130→RCH | DOLBY OUT<br>(LCH)<br>DOLBY OUT<br>(RCH) | —                        | —   |  |
| 16 | adres ENCODE Adjustment                           | —                  | —         | —                      | —   | —   | —               | —   | —        | —    | —   | —                      | —  | —                        | —   |  |
| ①  | Input Level Adjustment                            | 300 ±10mV          | —         | Adjustment             | —   | —   | —               | —   | OUT      | —    | —   | REC-VR<br>BAL→VR       | DOLBY OUT<br>(LCH)<br>DOLBY OUT<br>(RCH) | 1 kHz -20 dB             | —   | Don't vary after completion of REC/BAL VR adjustment |
| ②  | ENCODE Level Adjustment                           | 300 ±10mV          | —         | Adjustment<br>Position | —   | —   | —               | —   | adres    | —    | —   | R549<br>R550           | ENCODE (L)<br>ENCODE (R)                 | 1 kHz -20 dB             | —   | (Input Terminal → LINE-IN)                           |
| ③  | ENCODE Distortion Adjustment                      | Less than<br>0.12% | —         | —                      | —   | —   | —               | —   | —        | —    | —   | R553<br>R554           | ENCODE (L)<br>ENCODE (R)                 | 1 kHz -20 dB             | —   |  |
| ④  | ENCODE Limiter Adjustment                         | -2 ±0.2 dB         | —         | —                      | —   | —   | —               | —   | —        | —    | —   | R563<br>R564           | ENCODE (L)<br>ENCODE (R)                 | 1 kHz -10 kHz<br>-20 dB  | —   |  |
| ⑤  | ENCODE DUPLI Check                                | +2<br>-0.5 dB      | —         | —                      | —   | —   | —               | —   | —        | —    | —   | —                      | —  | —                        | —   |  |
| 17 | REC/PB Frequency Adjustment (CrO <sub>2</sub> )   | 0 ~ +1.0 dB        | AC-512    | —                      | —   | —   | —               | —   | OUT      | —    | —   | R681<br>R682           | { MONI or<br>LINE OUT                    | 333 Hz -10 kHz<br>-40 dB | —   |  |
| 18 | REC/PB Frequency Adjustment (normal)              | 0 ~ +1.0 dB        | AC-212    | —                      | —   | —   | —               | —   | —        | —    | —   | R773                   | { MONI or<br>LINE OUT                    | 333 Hz -10 kHz<br>-40 dB | —   | L/RCH difference -2 dB                               |
| 19 | REC/PB Frequency Adjustment (metal)               | 0 ~ +1.0 dB        | AC-711    | —                      | —   | —   | —               | —   | —        | —    | —   | R771                   | { MONI or<br>LINE OUT                    | 333 Hz -14 kHz<br>-40 dB | —   | L/RCH difference -5 dB                               |
| 20 | REC/PB Sensitivity Adjustment (CrO <sub>2</sub> ) | SOURCE<br>Level    | AC-512    | —                      | —   | —   | TAPE<br>SOURCE  | —   | —        | —    | —   | R603<br>R604           | { MONI or<br>LINE OUT                    | 333 Hz -17 dB            | —   | Auto tuning in Fix position                          |

11. OSC Frequency Adjustment

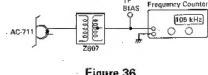


Figure 36

12. Bias Sensitivity Adjustment

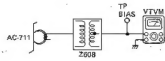


Figure 37

13. Bias Trap Adjustment

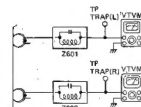


Figure 38

14. MOS Adjustment

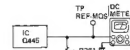


Figure 39

15. Built-in OSC Level Adjustment

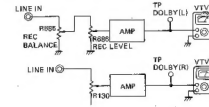


Figure 40

## 16. adres ENCODE Adjustment

## ① Input Level Adjustment

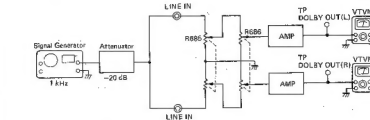


Figure 41

## ② ENCODE Level Adjustment

## ENCODE Limiter Adjustment

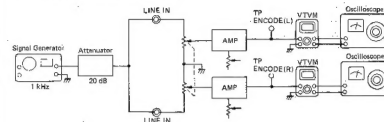


Figure 42

## ④ ENCODE Limiter Adjustment

## ENCODE DUPLI Check

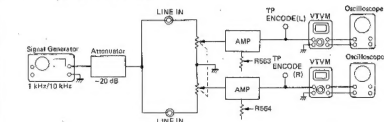


Figure 43

17. REC/PB Frequency Adjustment (CrO<sub>2</sub>)

## 18. REC/PB Frequency Adjustment (normal)

## 19. REC/PB Frequency Adjustment (metal)

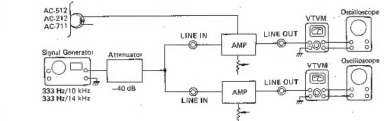



20. REC/PB Sensitivity Adjustment (CrO<sub>2</sub>)

Figure 44

## 20. Auto-tuning Alignment Method

1. Connect test point **A/D** to the ground.
2. Connect both ends of connector terminal J705, using a short jumper jig. 
3. Use the test tape AC-512.
4. Connect AC millivoltmeter and oscilloscope as shown below.
5. Use oscilloscope.

| Step | Item                               | Reference Value             | Tape Used | Switch                   |       | Alignment Point | Test Point  | Note  |
|------|------------------------------------|-----------------------------|-----------|--------------------------|-------|-----------------|---|---|
|      |                                    |                             |           | AUTO/FIX                 | START |                 |   |   |
| 1    | AF Oscillator 1 kHz Alignment      | 400mV                       | AC-512    | AUTO (AUTO LED turns on) | ON    | R730            | TP OSC  | Repeat to push start switch as OSC stops after 10 sec. elapsed. |
| 2    | Auto-tuning 1 kHz Level Alignment  | HIGH → LOW Level            | AC-512    | AUTO (AUTO LED turns on) | ON    | R323            | TP A/D-IN When "H" changed to "L"   |   |
| 3    | AF Oscillator 10 kHz Alignment     | 40mV                        | AC-512    | AUTO (AUTO LED turns on) | ON    | R732            | Ground TP 10K.AT<br>TP OSC  |   |
| 4    | Auto-tuning 10 kHz Level Alignment | LOW Level Longer "L" period | AC-512    | AUTO (AUTO LED turns on) | ON    | R327            | TP A/D-IN<br>0V  OK<br>0V  NG |   |

\* After completion of the alignment, remove the short jumper jig from J705 and short-circuits C709.

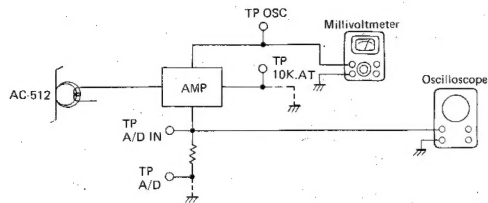
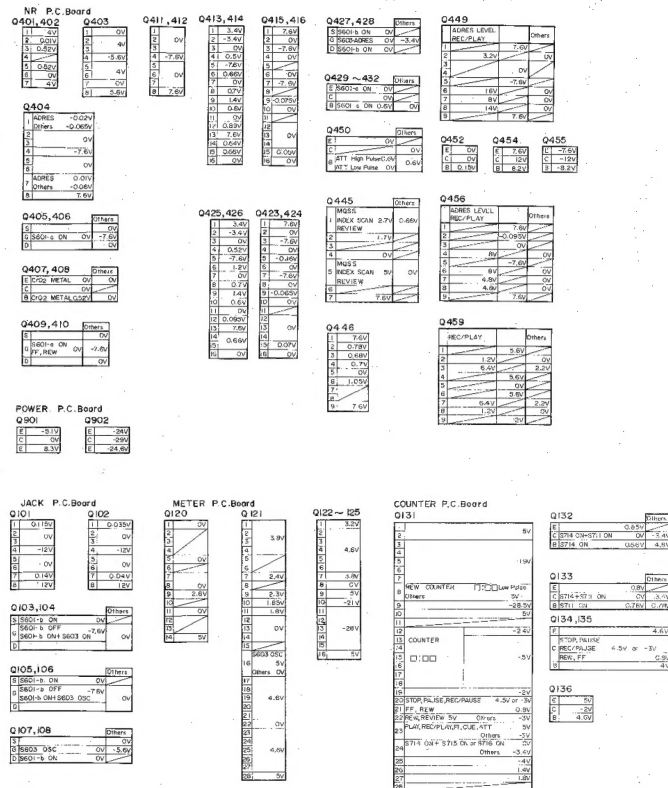


Figure 45

## 6. VOLTAGE CHART



|                       |      |        |
|-----------------------|------|--------|
| MMMA-CrO <sub>2</sub> | META | Qibers |
|                       | OV   |        |
| 12V                   | OV   | OV     |

|      |            |      |
|------|------------|------|
| OV   | High Pulse | 5.0V |
|      | Low Pulse  | OV   |
| 4.6V | High Pulse | 4.6V |
|      | Low Pulse  | OV   |
| OV   |            | 4V   |
| 4.6V |            | OV   |

|                |      |
|----------------|------|
| High Pulse     | 4.2V |
| Low Pulse      | 0V   |
| 0V             | 5V   |
| CAN High Pulse | 0V   |
| 5V             | 0V   |

|          |      |    |               |
|----------|------|----|---------------|
| WUE, A T | 4.8V | OV | 31 S712 PLAY  |
|          |      |    | 32 S713 RLC   |
| PLAY     | 4.8V | OV | 33 S713 1'LAY |
|          |      |    | 34 S702 ON    |
| EW       |      | OV | 35 S703 OV    |

|    |      |      |   |       |      |   |       |
|----|------|------|---|-------|------|---|-------|
| OV | 4.8V | Q903 | E | 12.8V | Q904 | E | -3.5V |
| OV | 4.8V |      | C | 19.8V |      | C | 19.8V |
| OV | 4.8V |      |   |       |      |   |       |
| OV | 3.3V |      |   |       |      |   |       |
| OV | 4.2V |      |   |       |      |   |       |

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## ELECTRICAL PARTS LOCATIONS (MECHANISM BLOCK)

## 7. ELECTRICAL PARTS LOCATIONS

## SCHEMATIC DIAGRAM (MECHANISM BLOCK)

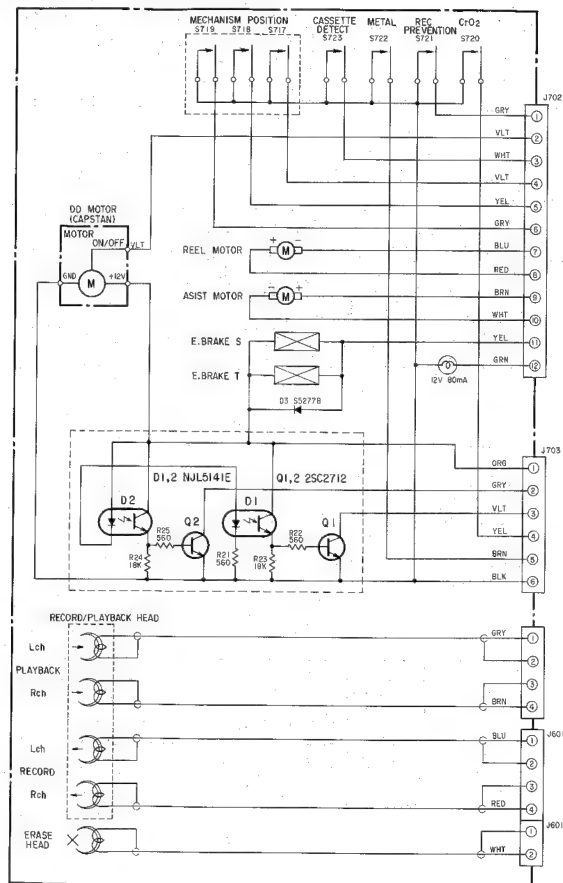
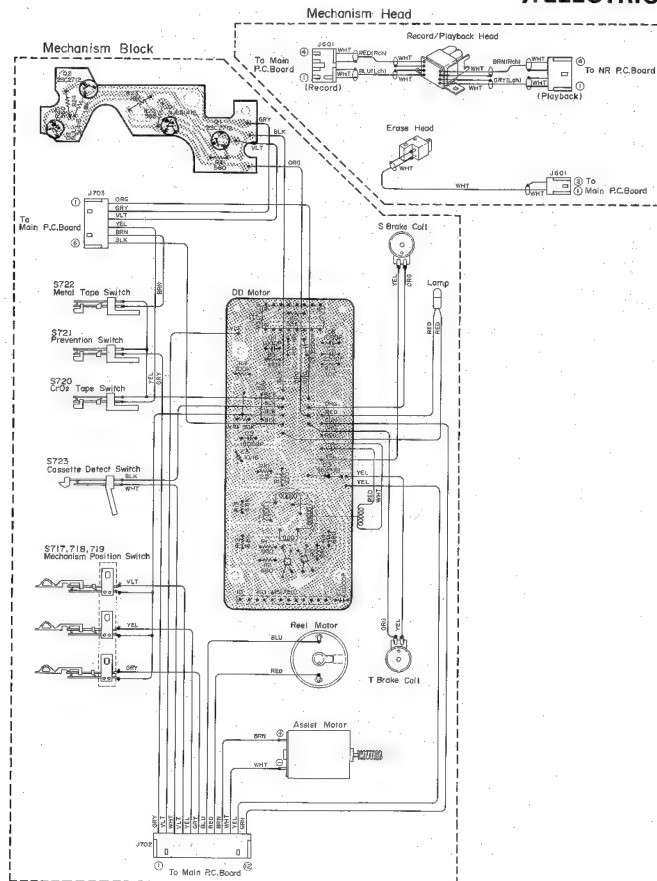


Figure 46

## ELECTRICAL PARTS LOCATIONS (OTHER P.C. BOARDS)

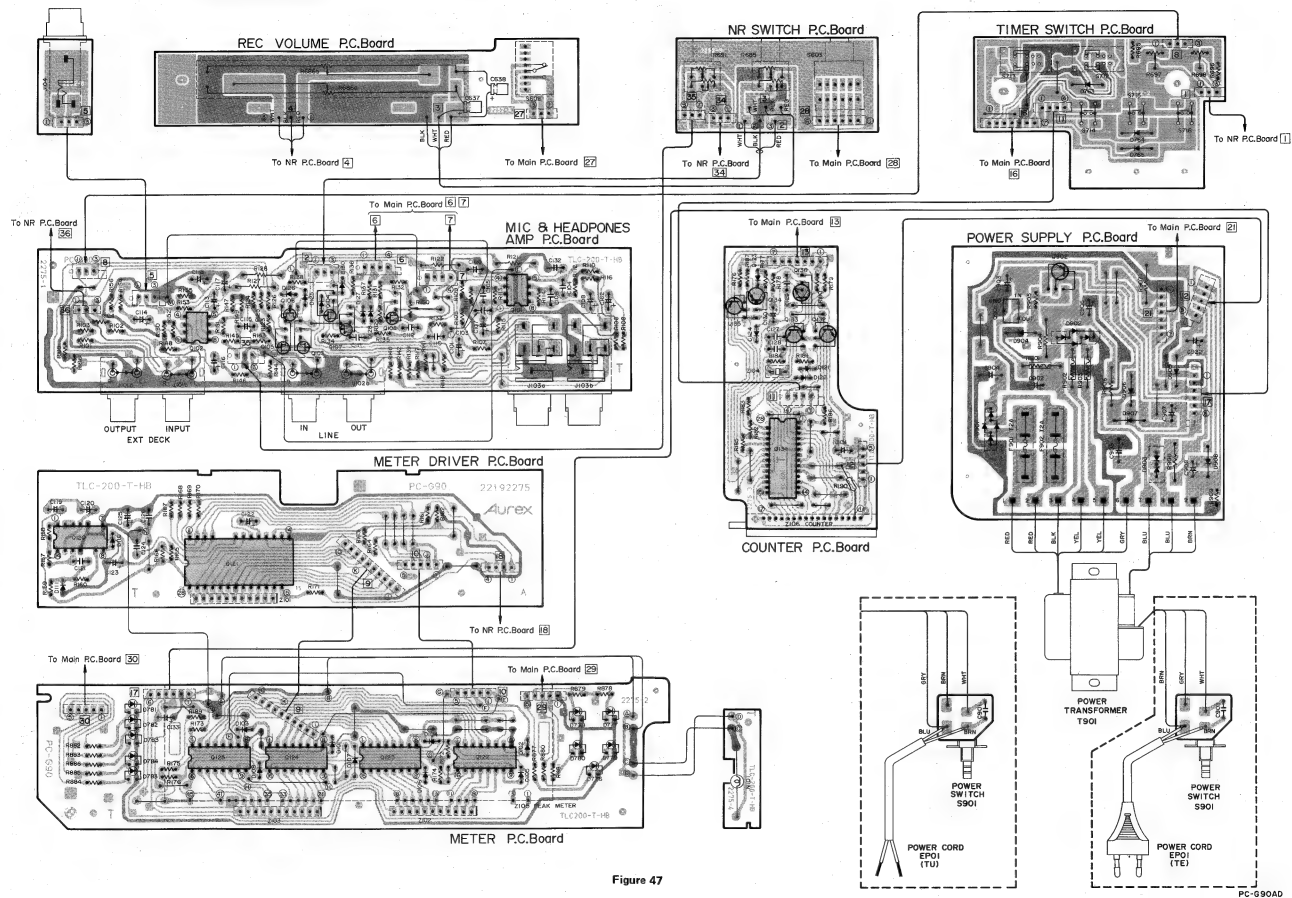


Figure 47

## ELECTRICAL PARTS LOCATIONS (NR P.C. BOARD)

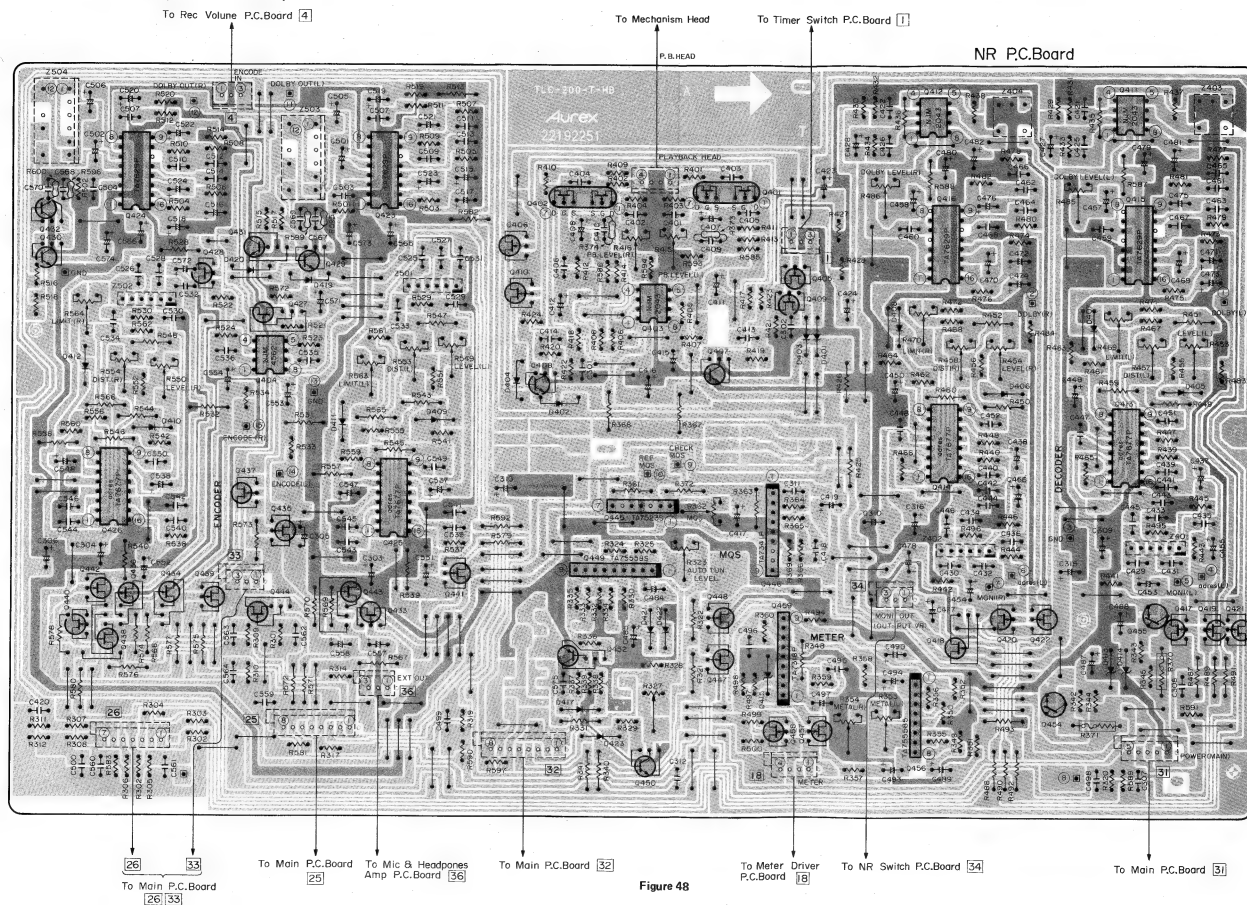


Figure 48

# ELECTRICAL PARTS LOCATIONS (NR P.C. BOARD)

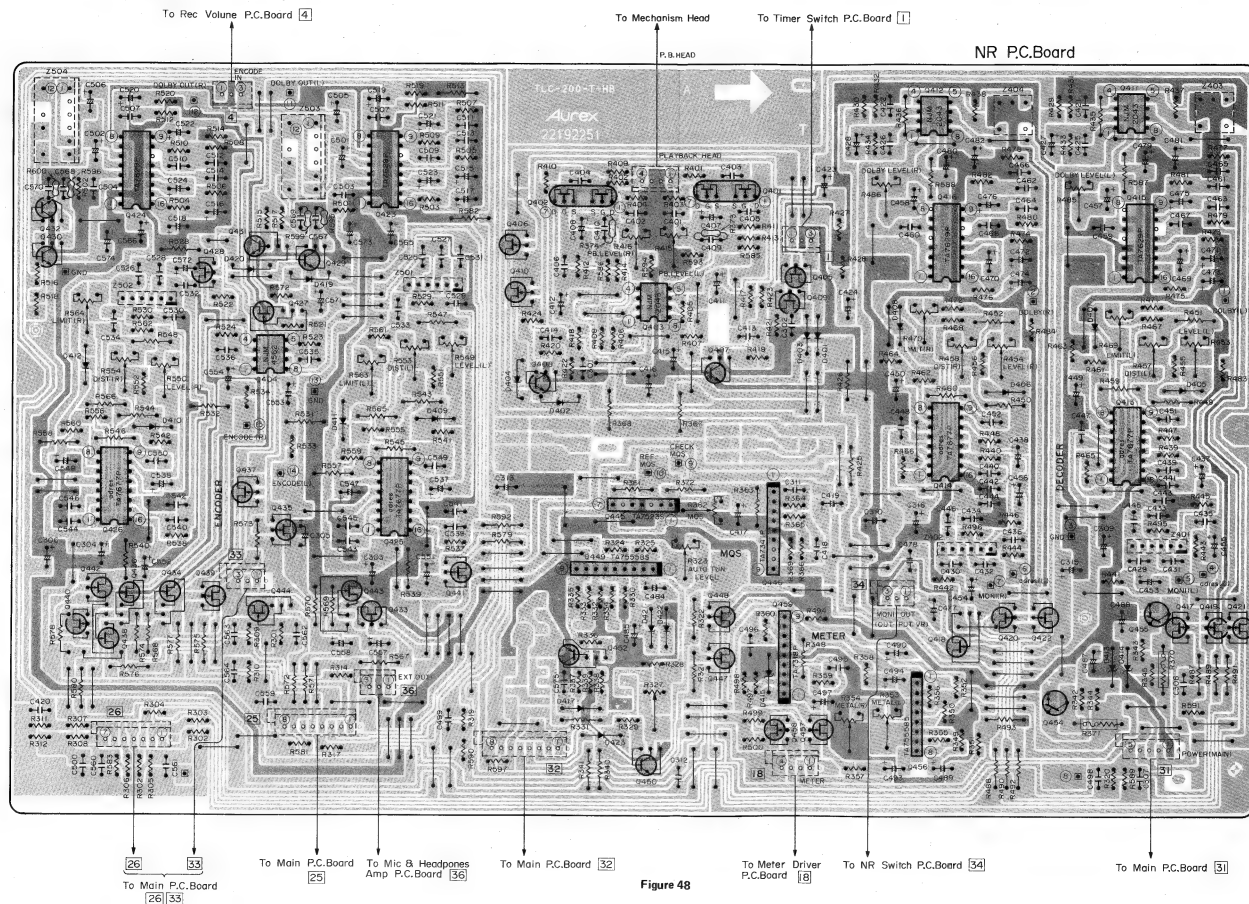
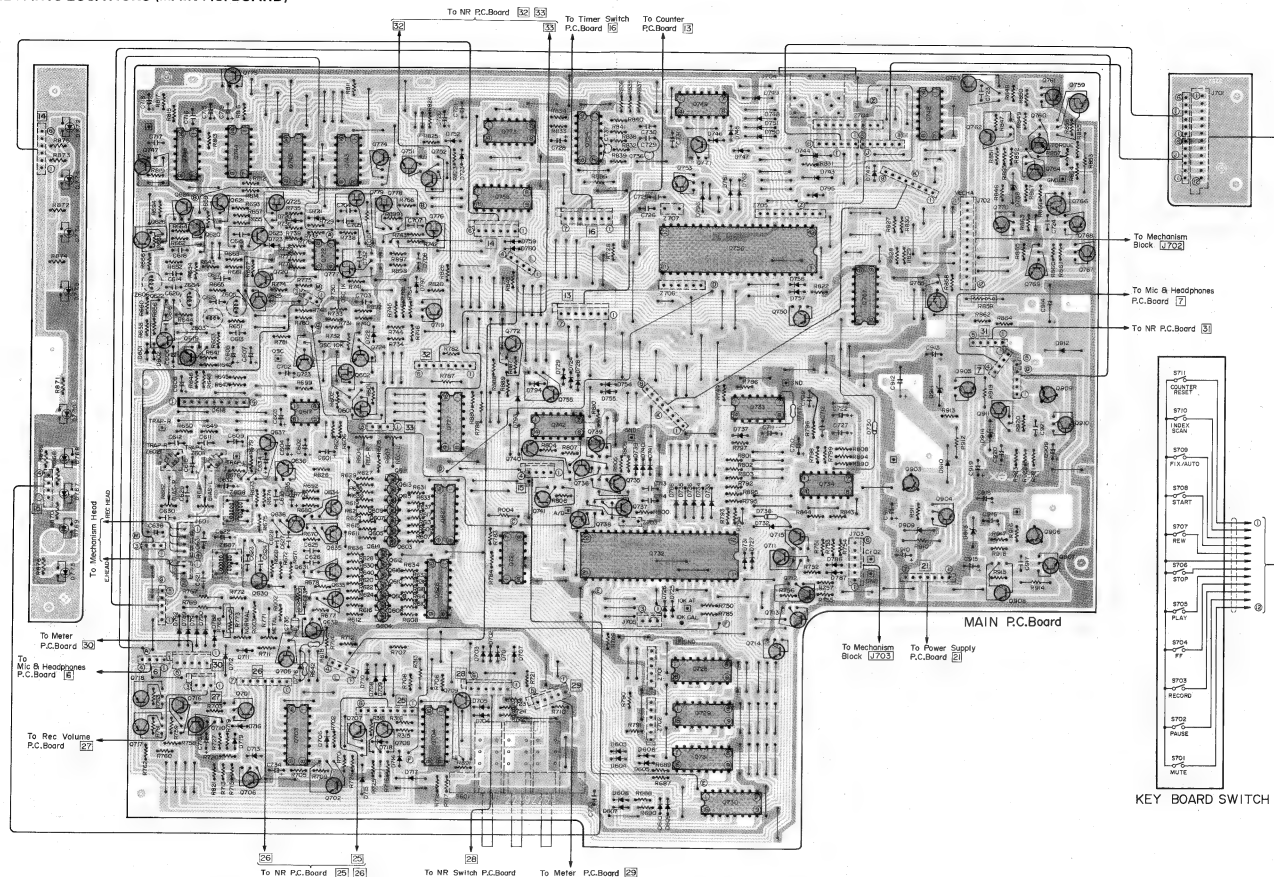
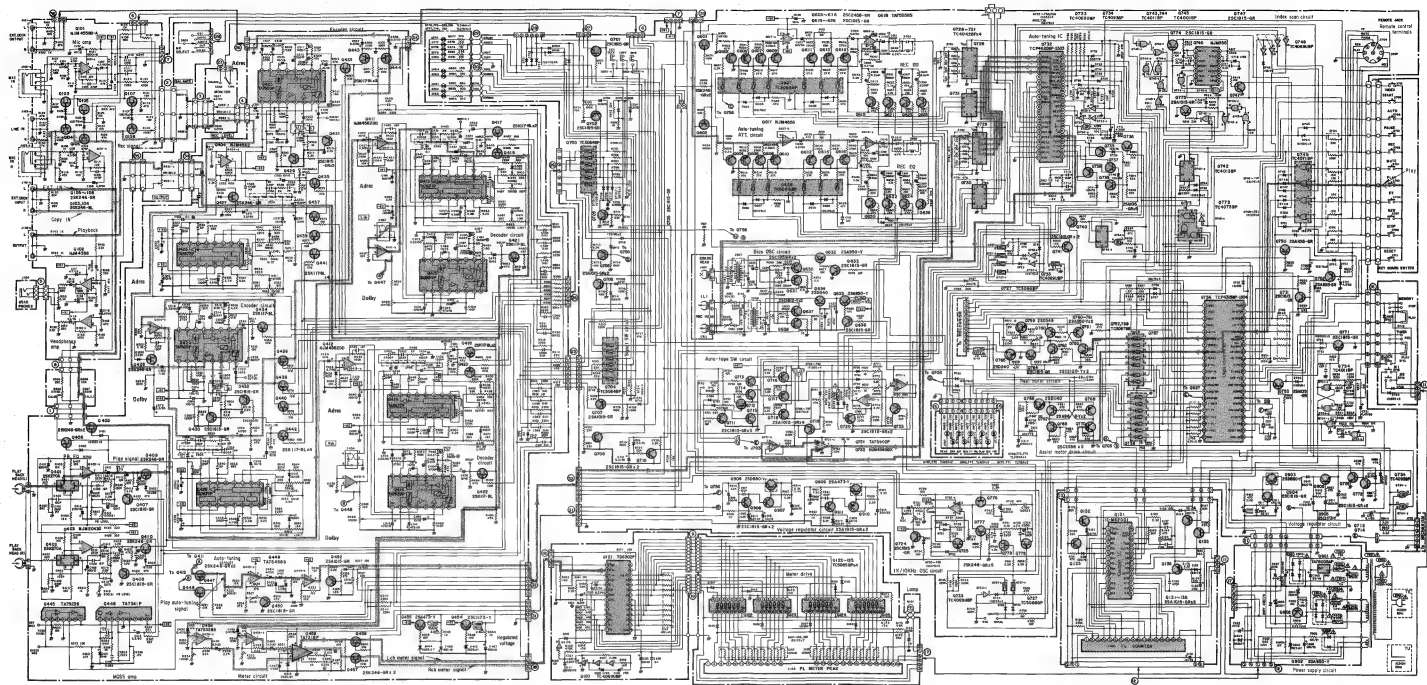


Figure 48

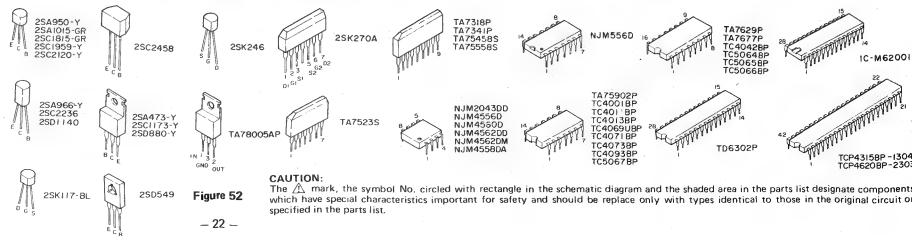
## ELECTRICAL PARTS LOCATIONS (MAIN P.C. BOARD)



## 8. SCHEMATIC DIAGRAM



|        | Name of switch                  | Current position |      |                                |
|--------|---------------------------------|------------------|------|--------------------------------|
| S601-a | External deck adres unit switch | OFF              | S711 | Counter reset switch           |
| S601-b | Copy switch                     | OFF              | S712 | Memory switch                  |
| S601-c | Multiplex filter switch         | OFF              | S713 | Timer switch                   |
| S602   | Monitor switch                  | OFF              | S714 | Block reset switch             |
| S701   | Noise reduction switch          | OFF              | S715 | Memory 1 switch                |
| S701   | Mute switch                     | OFF              | S716 | Memory 2 switch                |
| S702   | Pause switch                    | OFF              | S717 | Tape position detection switch |
| S703   | REC switch                      | OFF              |      |                                |
| S704   | F.F switch                      | OFF              | S719 |                                |
| S705   | Play switch                     | OFF              | S720 | Chromium tape switch           |
| S706   | REW switch                      | OFF              | S721 | Erase protection switch        |
| S707   | REW switch                      | OFF              | S722 | Metal tape switch              |
| S708   | Start switch                    | OFF              | S723 | Cassette tape detection switch |
| S709   | Fix auto switch                 | OFF              | S801 | Power switch                   |
| S710   | Index scan switch               | OFF              |      |                                |



## 9-1. EXPLODED VIEW MECHANISM

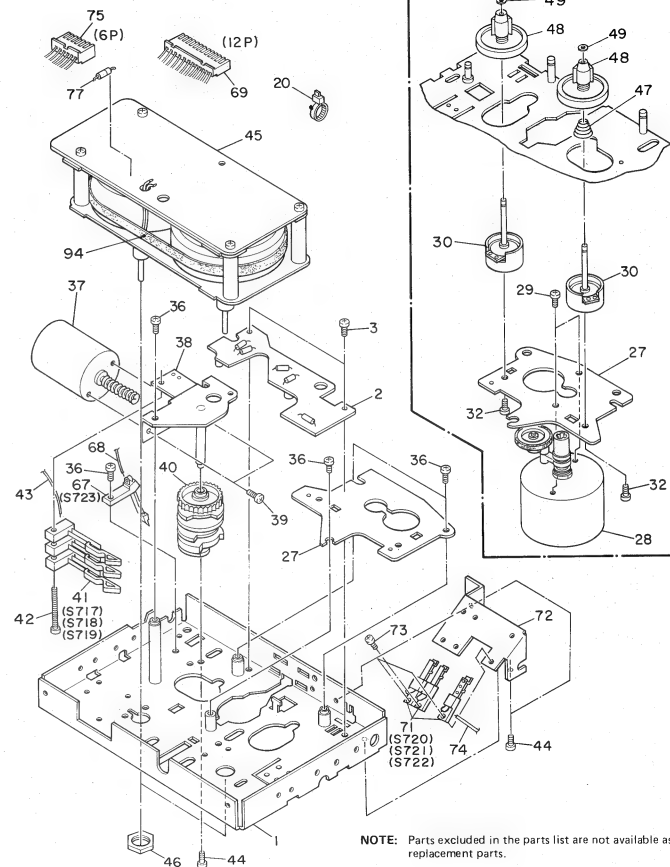
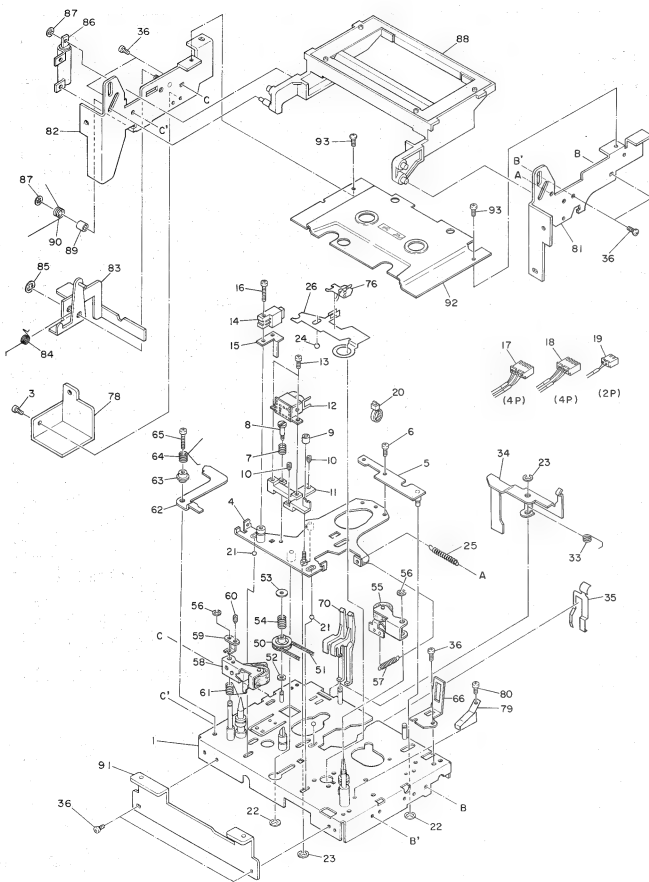


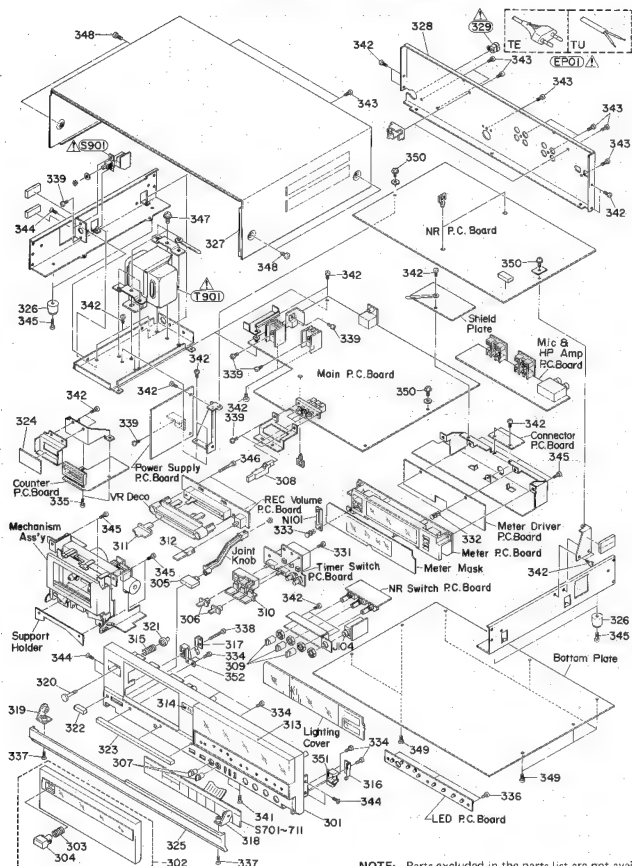
Figure 53

NOTE: Parts excluded in the parts list are not available as replacement parts.

## 9-2.MECHANISM PARTS LIST

| Symbol No. | Part No. | Description                     | Symbol No. | Part No. | Description              |
|------------|----------|---------------------------------|------------|----------|--------------------------|
| 1          | 25791600 | Mechanism Chassis Ass'y         | 58         | 25717574 | Pressure Roller Ass'y, S |
| 3          | 22707989 | Screw, 2.5φ x 4mm, FT           | 59         | 25748964 | Adjust Plate             |
| 4          | 25791601 | Head Base Ass'y                 | 60         | 22707994 | Screw, 2φ x 3mm          |
| 5          | 25791602 | Plate Ass'y, Connection         | 61         | 25778124 | Spring                   |
| 6          | 22707990 | Screw, 2.5φ x 3.5mm, FT         | 63         | 25753361 | Collar                   |
| 7          | 25777244 | Spring                          | 64         | 25773125 | Spring                   |
| 8          | 22707991 | Screw, Pivot                    | 65         | 22707995 | Screw, 2.5φ x 10mm       |
| 9          | 22702201 | Nut, Adjustment                 | 67         | 22196271 | Leaf Switch              |
| 10         | 22701440 | Screw, 2φ x 4mm                 | 70         | 25748967 | Lever, Record            |
| 11         | 25791603 | Head Block                      | 71         | 22196272 | Leaf Switch              |
| 12         | 22217410 | Head, Record/Playback, HRPT-410 | 73         | 22707265 | Screw, 2φ x 4mm          |
| 13         | 22701270 | Screw, 2φ x 4mm                 | 76         | 25748965 | Lamp Holder Ass'y        |
| 14         | 22218265 | Head, Erase                     | 77         | A7978380 | Diode, S52778            |
| 16         | 22707508 | Screw, 2φ x 12mm                | 79         | 25779342 | Spring, Cassette         |
| 21         | 25757116 | Steel Ball, 2φ                  | 80         | 22707996 | Screw                    |
| 22         | 22703279 | E Ring, 3φ                      | 82         | 25791607 | Side Plate Ass'y, Left   |
| 23         | 22703119 | E Ring, 2.5φ                    | 83         | 25748966 | Release Lever Ass'y      |
| 24         | 25757120 | Steel Ball, 3φ                  | 84         | 25778127 | Spring                   |
| 25         | 25776600 | Spring                          | 85         | 22703279 | E Ring, 3φ               |
| 26         | 25791604 | Head Holder Plate               | 86         | 25857181 | Damper Unit              |
| 28         | 25791605 | Reel Motor Ass'y, with Idler    | 87         | 20798037 | CS Ring, 1.9φ            |
| 29         | 22701389 | Screw, 2.6φ x 3mm               | 88         | 25881845 | Cassette Holder Ass'y    |
| 30         | 22147257 | Electromagnet Brake Coil        | 89         | 25753362 | Collar                   |
| 32         | 22707992 | Screw, 2.3φ x 4mm               | 90         | 25778126 | Spring                   |
| 33         | 25778123 | Spring                          | 92         | 25791610 | Mechanism Cover Ass'y    |
| 34         | 25748963 | Detector Lever                  | 93         | 22707997 | Screw, 2.5φ x 3.5mm, FT  |
| 35         | 25779343 | Spring, Cassette Tape           | 94         | 25755583 | Belt, DD Motor           |
| 36         | 22707350 | Screw, 2.6φ x 5mm               |            |          |                          |
| 37         | 25791608 | PAD Motor Ass'y                 |            |          |                          |
| 38         | 25791606 | Cam Gear Mount                  |            |          |                          |
| 39         | 22701467 | Screw, 2φ x 3mm                 |            |          |                          |
| 40         | 25756371 | Cam Gear                        |            |          |                          |
| 41         | 22196270 | Leaf Switch                     |            |          |                          |
| 42         | 22707993 | Screw, 2.5φ x 20mm              |            |          |                          |
| 44         | 22701270 | Screw, 2φ x 4mm                 |            |          |                          |
| 45         | 25791609 | DD Motor Ass'y, with Flywheel   |            |          |                          |
| 46         | 22702107 | Nut, 9φ                         |            |          |                          |
| 47         | 25777245 | Spring                          |            |          |                          |
| 48         | 25712438 | Reel Ass'y                      |            |          |                          |
| 49         | 25766050 | Washer, 1.6φ                    |            |          |                          |
| 50         | 25713574 | Pulley                          |            |          |                          |
| 51         | 25755582 | Belt, Back Tension              |            |          |                          |
| 52         | 25766125 | Washer                          |            |          |                          |
| 53         | 25766123 | Washer                          |            |          |                          |
| 54         | 25777246 | Spring                          |            |          |                          |
| 55         | 25717573 | Pressure Roller Ass'y           |            |          |                          |
| 56         | 22703118 | E Ring, 2φ                      |            |          |                          |
| 57         | 25776602 | Spring                          |            |          |                          |

## 10-1. EXPLODED VIEW CABINET



NOTE: Parts excluded in the parts list are not available as replacement parts.

Figure 54

## 10-2. CABINET PARTS LIST

## CAUTION:

The  $\Delta$  mark, the symbol No. circled with rectangle in the schematic diagram and the shaded area in the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list.

| Symbol No. | Part No. | Description                     | Symbol No. | Part No. | Description                    |
|------------|----------|---------------------------------|------------|----------|--------------------------------|
| 301        | 25829518 | Front Panel Ass'y               | 345        | 22707844 | Screw, 3φ x 10mm, B/D Tapping  |
| 302        | 25881642 | Cassette Cover Ass'y            | 346        | 22707932 | Screw, 3φ x 25mm, B/D          |
| 303        | 25777192 | Spring, Eject                   | 347        | 22707196 | Screw, 4φ x 8mm, FLETAPAN      |
| 304        | 25837919 | Knob, Eject                     | 348        | 22707519 | Screw, 4φ x 10mm, DTB/D        |
| 305        | 25837938 | Knob, Power                     | 349        | 22707942 | Screw, 3φ x 6mm, DTB/D Tapping |
| 306        | 25837970 | Knob, Timer/Memory              | 350        | 22707798 | Screw, 3φ x 10mm, DTPAN        |
| 307        | 25837937 | Knob, Calibration, Left/Right   | 351        | 25833533 | Sealing Guide, Left            |
| 308        | 25837934 | Knob, EXT Deck/Copy/MPX         | 352        | 25833534 | Sealing Guide, Right           |
| 309        | 25837936 | Knob, NR/Balance/Output         |            |          |                                |
| 310        | 25837933 | Knob, Block Repeat/Memory 1, 2  |            |          |                                |
| 311        | 25837931 | Knob, Record Level              |            |          |                                |
| 312        | 25837932 | Knob, Monitor/Source/Tape       |            |          |                                |
| 313        | 25832714 | Meter Cover                     |            |          |                                |
| 314        | 25832715 | Counter Cover                   |            |          |                                |
| 315        | 25777195 | Spring                          |            |          |                                |
| 316        | 25779314 | Spring, Left                    |            |          |                                |
| 317        | 25779315 | Spring, Right                   |            |          |                                |
| 318        | 25810144 | Shaft, Left                     |            |          |                                |
| 319        | 25810145 | Shaft, Right                    |            |          |                                |
| 320        | 25810146 | Eject Pin, A                    |            |          |                                |
| 321        | 25810147 | Eject Pin, B                    |            |          |                                |
| 322        | 25814363 | Decoration Panel, A             |            |          |                                |
| 323        | 25814364 | Decoration Panel, B             |            |          |                                |
| 324        | 25832761 | Filter, Counter                 |            |          |                                |
| 325        | 25881881 | Sealing Ass'y                   |            |          |                                |
| 326        | 22874041 | Foot                            |            |          |                                |
| 327        | 25864210 | Top Cover                       |            |          |                                |
| 328        | 25864245 | Jack Plate (TE)                 |            |          |                                |
| 329        | 25864246 | Jack Plate (TU)                 |            |          |                                |
| 330        | 25845522 | Cord Bush                       |            |          |                                |
| 331        | 22701325 | Screw, 3φ x 8mm, B/D            |            |          |                                |
| 332        | 22705020 | Plastic Rivet, 3φ x 4.5mm       |            |          |                                |
| 333        | 22705026 | Plastic Rivet, 3φ x 6.5mm       |            |          |                                |
| 334        | 22707037 | Screw, 2.6φ x 6mm, B/D          |            |          |                                |
| 335        | 22707366 | Screw, 2.6φ x 6mm, DTB/D        |            |          |                                |
| 336        | 22707323 | Screw, 2.6φ x 8mm, B/D          |            |          |                                |
| 337        | 22707931 | Screw, 2.6φ x 10mm, FLT Tapping |            |          |                                |
| 338        | 22707918 | Screw, 2.6φ x 20mm, B/D         |            |          |                                |
| 339        | 22707066 | Screw, 3φ x 6mm, B/D            |            |          |                                |
| 341        | 22707051 | Screw, 3φ x 6mm, FLT            |            |          |                                |
| 342        | 22707842 | Screw, 3φ x 8mm, DTB/D Tapping  |            |          |                                |
| 343        | 22707911 | Screw, 3φ x 8mm, DTB/D Tapping  |            |          |                                |
| 344        | 22707909 | Screw, 3φ x 8mm, DTFLT Tapping  |            |          |                                |

## 11. PARTS LIST

## CAUTION:

The  $\Delta$  mark, the symbol No. circled with rectangle in the schematic diagram and the shaded area in the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list.

| Symbol No.                            | Part No. | Description               | Symbol No. | Part No. | Description               |
|---------------------------------------|----------|---------------------------|------------|----------|---------------------------|
| <b>IC'S, TRANSISTORS &amp; DIODES</b> |          |                           |            |          |                           |
| Q101                                  | 22114470 | IC, NJM4558D-A            | Q601, 602  | A6044630 | Transistor, 2SK246-GR     |
| Q102                                  | 22114901 | IC, NJM4556               | Q603, 604, | A6332440 | Transistor, 2SC2458-GR    |
| Q103, 104                             | A6044640 | Transistor, 2SK246-BL     | 605, 606,  |          |                           |
| Q105, 106,                            | A6044630 | Transistor, 2SK246-GR     | 607, 608,  |          |                           |
| 107, 108                              |          |                           | 609, 610,  |          |                           |
| Q120                                  | B0470693 | IC, TC4069UBP             | 611, 612,  |          |                           |
| Q121                                  | 22117218 | IC, TD6302P               | 613, 614,  |          |                           |
| Q122, 123,                            | B0480652 | IC, TC5065BP              | 615, 616   |          |                           |
| 124, 125                              |          |                           | Q617       | 22114901 | IC, NJM4556               |
| Q131                                  | 22117083 | IC, M62001                | Q618       | B0350510 | IC, TA75558S              |
| Q132, 133,                            | A6534060 | Transistor, 2SA1015-GR    | Q619, 620, | A6317460 | Transistor, 2SC1815NEW-GR |
| 134, 135,                             |          |                           | 621, 622,  |          |                           |
| 136                                   |          |                           | 623, 624,  |          |                           |
|                                       |          |                           | 625, 626,  |          |                           |
| Q401, 402                             | A6046030 | Transistor, 2SK270A-BL    | 633, 636,  |          |                           |
| Q403                                  | 22117147 | IC, NJM2043D              | 637, 638   |          |                           |
| Q404, 411,                            | 22114979 | IC, NJM4562DD             | Q630, 631  | A6319300 | Transistor, 2SC1959NEW-Y  |
| 412                                   |          |                           | Q632, 635  | A6532940 | Transistor, 2SA950-Y      |
| Q405, 406,                            | A6044630 | Transistor, 2SK246-GR     | Q634       | A6857700 | Transistor, 2SD1140       |
| 409, 410,                             |          |                           | Q627, 628  | B0480662 | IC, TC5066BP              |
| 427, 428,                             |          |                           | Q701, 702, | A6317460 | Transistor, 2SC1815NEW-GR |
| 447, 448,                             |          |                           | 705, 709,  |          |                           |
| 457, 458                              |          |                           | 710, 711,  |          |                           |
| Q407, 408,                            | A6317460 | Transistor, 2SC1815NEW-GR | 712, 713,  |          |                           |
| 429, 430,                             |          |                           | 714, 715,  |          |                           |
| 431, 432,                             |          |                           | 720, 723,  |          |                           |
| 450                                   |          |                           | 724, 740,  |          |                           |
| Q413, 414,                            | B0356770 | IC, TA7677P               | 741, 747,  |          |                           |
| 425, 426                              |          |                           | 751, 755,  |          |                           |
| Q415, 416,                            | B0356150 | IC, TA7629P               | 764, 771,  |          |                           |
| 423, 424                              |          |                           | 772, 774   |          |                           |
| Q417, 418,                            | A6041880 | Transistor, 2SK117-BL     | Q703, 704  | B0480642 | IC, TC5064BP              |
| 419, 420,                             |          |                           | Q706, 707, | A6534060 | Transistor, 2SA1015-GR    |
| 421, 422,                             |          |                           | 708, 716,  |          |                           |
| 433, 434,                             |          |                           | 717, 718,  |          |                           |
| 435, 436,                             |          |                           | 719, 735,  |          |                           |
| 437, 438,                             |          |                           | 736, 737,  |          |                           |
| 439, 440,                             |          |                           | 738, 739,  |          |                           |
| 441, 442,                             |          |                           | 750, 752,  |          |                           |
| 443, 444                              |          |                           | 753, 775   |          |                           |
| Q445                                  | B0347130 | IC, TA7523S               | Q721       | B0351500 | IC, TA75902P              |
| Q446                                  | B0325320 | IC, TA7341P               | Q722       | 22114866 | IC, NJM4560DX             |
| Q449, 456                             | B0350510 | IC, TA75558S              | Q725, 776, | A6044630 | Transistor, 2SK246-GR     |
| Q452                                  | A6534060 | Transistor, 2SA1015-GR    | 777, 778,  |          |                           |
| Q454                                  | A677164A | Transistor, 2SC1173-Y-X   | 779        |          |                           |
| Q455                                  | A6500740 | Transistor, 2SA473-Y      | Q727       | B0480662 | IC, TC5066BP              |
| Q459                                  | B0324880 | IC, TA7318P-2             |            |          |                           |

| Symbol No. | Part No. | Description               | Symbol No. | Part No. | Description     |
|------------|----------|---------------------------|------------|----------|-----------------|
| Q728, 729, | B0470422 | IC, TC4042BP              | D601, 602, | A7160570 | Diode, 1SS176   |
| 730, 731   |          |                           | 603, 604,  |          |                 |
| Q732       | 22117217 | IC, TC4620BP, 2303        | 605, 606,  |          |                 |
| Q733, 748  | B0470693 | IC, TC4069UBP             | 607, 608,  |          |                 |
| Q734       | B0470932 | IC, TC4093BP              | 609, 610   |          |                 |
| Q742       | B0470135 | IC, TC4013BP              |            |          |                 |
| Q743, 744, | B0470116 | IC, TC4011BP              | D701, 702, | A7160570 | Diode, 1SS176   |
| 754        |          |                           | 703, 704,  |          |                 |
| Q745       | B0470016 | IC, TC4001BP              | 705, 706,  |          |                 |
| Q746       | 22117144 | IC, NJM556D               | 707, 710,  |          |                 |
| Q749       | B0470713 | IC, TC4071BP              | 711, 713,  |          |                 |
| Q756       | 22117082 | IC, TMP4315-1304          | 714, 716,  |          |                 |
| Q757, 758  | B0480672 | IC, TC5067BP              | 718, 719,  |          |                 |
| Q759       | A6841900 | Transistor, 2SD549        | 720, 721,  |          |                 |
| Q760, 761  | A6532940 | Transistor, 2SA950-Y      | 722, 723,  |          |                 |
| Q762, 763  | A6321240 | Transistor, 2SC2120-Y     | 724, 725,  |          |                 |
| Q765, 766  | A6857700 | Transistor, 2SD1140       | 726, 727,  |          |                 |
| Q767, 768  | A6533240 | Transistor, 2SA966-Y      | 728, 729,  |          |                 |
| Q769, 770  | A6325540 | Transistor, 2SC2236-Y     | 731, 737,  |          |                 |
| Q773       | B0470732 | IC, TC4073BP              | 739, 740,  |          |                 |
|            |          |                           | 741, 742,  |          |                 |
| Q901       | B0372540 | IC, TA78005AP             | 745, 748,  |          |                 |
| Q902       | A6532940 | Transistor, 2SA950-Y      | 747, 752,  |          |                 |
| Q903, 906  | A6848520 | Transistor, 2SD880-Y      | 753, 754,  |          |                 |
| Q904, 907, | A6317460 | Transistor, 2SC1815NEW-GR | 755, 756,  |          |                 |
| 908        |          |                           | 757, 759,  |          |                 |
| Q905       | A677164A | Transistor, 2SC1173-Y-X   | 760, 786,  |          |                 |
| Q909       | A6500740 | Transistor, 2SA473-Y      | 787, 788,  |          |                 |
| Q910, 911  | A6534060 | Transistor, 2SA1015-GR    | 794, 795,  |          |                 |
|            |          |                           | 797        |          |                 |
| D101, 102, | A7160570 | Diode, 1SS176             | D708, 709  | A7246703 | Diode, 1S1555V  |
| 103, 104,  |          |                           | 712, 715,  |          |                 |
| 105, 106,  |          |                           | 717, 733,  |          |                 |
| 108, 110,  |          |                           | 734, 735,  |          |                 |
| 111, 121,  |          |                           | 736, 743,  |          |                 |
| 122, 123,  |          |                           | 744, 748,  |          |                 |
| 124, 125,  |          |                           | 749, 750,  |          |                 |
| 126, 127,  |          |                           | 751, 764,  |          |                 |
| 128, 129,  |          |                           | 765, 766,  |          |                 |
| 130        |          |                           | 776, 789,  |          |                 |
| D107       | A7246703 | Diode, 1S1555V            | 790, 791,  |          |                 |
| D401, 402, | A7246703 | Diode, 1S1555V            | 792, 793   |          |                 |
| 403, 404,  |          |                           | D732       | A7978390 | Diode, S5277B   |
| 405, 406,  |          |                           | D758       | A7110262 | Diode, 0529.1-Y |
| 407, 408,  |          |                           | D761, 762, | 22115808 | Diode, 1K60A    |
| 409, 410,  |          |                           | 763, 796   |          |                 |
| 411, 412,  |          |                           | D767, 772  | A8611940 | Diode, TLO124   |
| 417, 419,  |          |                           | D768, 774  | A8601150 | Diode, TLR124   |
| 420, 423,  |          |                           | D769, 773, | A8606201 | Diode, TLG124A  |
| D413, 414  | A7110208 | Diode, 05Z8.2-Y-X/Y       | 775        |          |                 |
| D415       | A7110017 | Diode, 05Z6.6-Y-Z         |            |          |                 |
| D421, 422  | 22115808 | Diode, 1K60A              |            |          |                 |

| Symbol No.  | Part No.             | Description   |
|---|----------------------|---|
| D770, 771<br>D776, 779,<br>780, 781,<br>782, 783,<br>785  | A8608500<br>A8638570 | Diode, TLY124<br>Diode, TLS164  |
| D777, 778,<br>784   | A8606460             | Diode, TLG164   |
| D901, 902<br>D903   | 22115737<br>A7982012 | Diode, KBP01<br>Diode, 1B2C1 (1)  |
| D904  | A7110664             | Diode, 05Z24-Y  |
| D905  | A7110262             | Diode, 05Z9.1-Y   |
| D906  | A7110411             | Diode, 05Z12-Y-X/Y  |
| D907, 910,<br>912   | A7978380             | Diode, 5S277B   |
| D908, 911,<br>913, 914<br>D909  | A7110017<br>22115867 | Diode, 05Z5.6-Y-Y/Z<br>Diode, XZ137   |
| ELECTRICAL PARTS  |                      |   |
| T901  | 22224246             | Transformer, Power  |
| N101  | 22113592             | Lamp, 12V, 80mA, GRN  |
| F901, 902   | 22144379             | Fuse, 12A, 250V   |
| S601  | 22196165             | Switch, Push, EXT DECK/<br>COPY/MPX   |
| S602  | 22196164             | Switch, Push, Monitor   |
| S603  | 22196186             | Switch, Rotary, NR  |
| S701, 702,<br>703, 704,<br>705, 706,<br>707, 708,<br>709, 710,<br>711<br>S712, 713<br>S714, 715,<br>716 | 25819525             | Key Board Switch Ass'y,<br>Mute/Pause<br>Record/FF<br>Play/Stop<br>REW/Start<br>FIX Auto/Index<br>Scan<br>Counter Reset |
|   | 22195568<br>22195924 | Switch, Slide, Memory/Timer<br>Switch, Key, Block Repeat/<br>Memory-1/Memory-2  |

| Symbol No.             | Part No. | Description   |
|------------------------|----------|---|
| S717, 718,<br>719      | 22196270 | Switch, Leaf, Mecha Position<br>Detector                  |
| S720, 721,<br>722      | 22196272 | Switch, Leaf, Chrome/REC<br>Prevention/Metal              |
| S723                   | 22196271 | Switch, Leaf, Tape Detector                               |
| S901                   | 22196150 | Switch, Push, Power                                       |
| J101, 102              | 22163887 | Jack, US4P  |
| J103                   | 22163886 | Jack, 6 $\phi$ x 2, Microphone                            |
| J104                   | 22163889 | Jack, 6 $\phi$ , Headphone                                |
| J701                   | 22169012 | Socket, Jump, Key Board                                   |
| J704                   | 22167964 | DIN Jack, 8P  |
| Z101, 102,<br>103      | 22134150 | Composite Part, 47K x 10                                  |
| Z104                   | 22153244 | Ceramic Oscillator, 485 KHz                               |
| Z105                   | 22104588 | Meter, Peak   |
| Z106                   | 22104587 | Counter   |
| Z401, 402              | 22134147 | Composite Part, 120K/33K/<br>33K/33K/3.9K                 |
| Z403, 404              | 22212065 | Coil, Bias Trap, 105 KHz                                  |
| Z501, 502              | 22134147 | Composite Part, 120K/33K/<br>33K/33K/3.9K                 |
| Z503, 504              | 22212064 | Filter, Dolby   |
| Z601, 602              | 22235218 | Coil, Bias Trap, 105 KHz                                  |
| Z603, 604,<br>605, 606 | 22232778 | Coil, Choke, 8.2mH  |
| Z607, 608              | 22235226 | Coil, Bias Oscillator                                     |
| Z701, 702              | 22134154 | Composite Part,<br>50K x 3/10K x 5                        |
| Z703                   | 22153188 | Ceramic Oscillator, 400 KHz                               |
| Z704                   | 22130709 | Composite Part, 15K/33K/<br>100K/15K/15K/100K/15K/<br>15K |
| Z705                   | 22130708 | Composite Part, 15K x 6                                   |
| Z706                   | 22134167 | Composite Part, 4.7K x 5                                  |
| Z707                   | 22153244 | Ceramic Oscillator, 455 KHz                               |
| EP01                   | 22176642 | Power Cord (FE)   |
| EP01                   | 22179841 | Power Cord (FJL)  |
| EP02                   | 22165047 | Fuse Holder   |

| Symbol No.   | Part No. | Description          |
|--|----------|----------------------|
| CAPACITORS   |          |                      |
| D = $\pm 0.5\text{pF}$ , G = $\pm 2\%$ , J = $\pm 5\%$ , K = $\pm 10\%$ , M = $\pm 20\%$ ,<br>Z = $-20 + 80\%$ |          |                      |
| ABBREVIATIONS: EL = Electrolytic, CD = Ceramic Disk,<br>MY = Mylar, PP = Polypropylene,<br>PS = Polystyrene    |          |                      |
| C101, 102  | 22488479 | EL, 4.7mfd, 50V      |
| C103, 104  | 22349471 | CD, 470pF, 50V, K    |
| C105, 106  | 22349471 | CD, 470pF, 50V, K    |
| C107, 108  | 22488479 | EL, 4.7mfd, 50V      |
| C109   | 22485470 | EL, 47mfd, 16V       |
| C110, 111  | 22360484 | CD, 0.047mfd, 50V, Z |
| C113, 114  | 22485330 | EL, 33mfd, 16V       |
| C115, 116  | 22488478 | EL, 0.47mfd, 50V     |
| C117, 118  | 22485470 | EL, 47mfd, 16V       |
| C119, 120  | 22488109 | EL, 1mfd, 50V        |
| C121   | 22342473 | CD, 0.047mfd, 50V, Z |
| C122   | 22488478 | EL, 0.47mfd, 50V     |
| C123   | 22480006 | EL, 0.33mfd, 50V     |
| C124   | 22371102 | MY, 0.001mfd, 50V, J |
| C125   | 22483101 | EL, 100mfd, 10V      |
| C126   | 22372104 | MY, 0.1mfd, 50V, K   |
| C127   | 22362880 | CD, 68pF, 50V, K     |
| C128   | 22349221 | CD, 220pF, 50V, K    |
| C129   | 22349471 | CD, 470pF, 50V, K    |
| C130   | 22488109 | EL, 1mfd, 50V        |
| C131   | 22485100 | EL, 10mfd, 16V       |
| C132   | 22485470 | EL, 47mfd, 16V       |
| C133   | 22488100 | EL, 10mfd, 50V       |
| C301, 302  | 22371102 | MY, 1000pF, 50V, J   |
| C303, 304  | 22483471 | EL, 470mfd, 10V      |
| C305, 306  | 22483471 | EL, 470mfd, 10V      |
| C307, 308  | 22342103 | CD, 0.01mfd, 50V, Z  |
| C309, 310  | 22483471 | EL, 470mfd, 10V      |
| C311, 312  | 22342103 | CD, 0.01mfd, 50V, Z  |
| C313   | 22485330 | EL, 33mfd, 16V       |
| C315, 316  | 22483471 | EL, 470mfd, 10V      |
| C401, 402  | 22321164 | PP, 220pF, 50V, J    |
| C403, 404  | 22362101 | CD, 100pF, 50V, K    |
| C405, 406  | 22362180 | CD, 18pF, 50V, K     |
| C407, 408  | 22483101 | EL, 100mfd, 10V      |
| C409, 410  | 22371153 | MY, 0.015mfd, 50V, J |
| C411, 412  | 22485330 | EL, 33mfd, 16V       |
| C413, 414  | 22372103 | MY, 0.01mfd, 50V, K  |
| C415, 416  | 22483221 | EL, 220mfd, 10V      |
| C417   | 22485100 | EL, 10mfd, 16V       |
| C418   | 22342223 | CD, 0.022mfd, 50V, Z |
| C419   | 22488339 | EL, 3.3mfd, 50V      |
| C420   | 22342223 | CD, 0.022mfd, 50V, Z |

| Symbol No. | Part No. | Description          |
|------------|----------|----------------------|
| C421, 422  | 22362101 | CD, 100pF, 50V, K    |
| C423, 424  | 22485100 | EL, 10mfd, 16V       |
| C425, 426  | 22362180 | CD, 18pF, 50V, K     |
| C427, 428  | 22488479 | EL, 4.7mfd, 50V, K   |
| C429, 430  | 22321307 | PP, 4700pF, 100V, G  |
| C431, 432  | 22321309 | PP, 235pF, 100V, G   |
| C433, 434  | 22321308 | PP, 9100pF, 100V, G  |
| C435, 436  | 22321306 | PP, 1500pF, 100V, G  |
| C437, 438  | 22485100 | EL, 10mfd, 16V       |
| C439, 440  | 22361809 | CD, 8pF, 50V, D      |
| C441, 442  | 22349221 | CD, 220pF, 50V, K    |
| C443, 444  | 22362101 | CD, 100pF, 50V, K    |
| C445, 446  | 22372104 | MY, 0.1mfd, 50V, K   |
| C447, 448  | 22349102 | CD, 1000pF, 50V, K   |
| C449, 450  | 22488479 | EL, 4.7mfd, 50V      |
| C451, 452  | 22349222 | CD, 2200pF, 50V, K   |
| C453, 454  | 22485100 | EL, 10mfd, 16V       |
| C455, 456  | 22485100 | EL, 10mfd, 16V       |
| C457, 458  | 22485100 | EL, 10mfd, 16V       |
| C459, 460  | 22362101 | CD, 100pF, 50V, K    |
| C461, 462  | 22371562 | MY, 5600pF, 50V, J   |
| C463, 464  | 22371472 | MY, 4700pF, 50V, J   |
| C465, 466  | 22371273 | MY, 0.027mfd, 50V, J |
| C467, 468  | 22371473 | MY, 0.047mfd, 50V, J |
| C469, 470  | 22485100 | EL, 10mfd, 16V       |
| C471, 472  | 22480003 | EL, 0.1mfd, 50V      |
| C473, 474  | 22480006 | EL, 0.33mfd, 50V     |
| C475, 476  | 22485100 | EL, 10mfd, 16V       |
| C477, 478  | 22485100 | EL, 10mfd, 16V       |
| C479, 480  | 22483101 | EL, 100mfd, 10V      |
| C481, 482  | 22483101 | EL, 100mfd, 10V      |
| C484, 485  | 22488479 | EL, 4.7mfd, 50V      |
| C487, 488  | 22483101 | EL, 100mfd, 10V      |
| C489, 490  | 22488478 | EL, 0.47mfd, 50V     |
| C493, 494  | 22488479 | EL, 4.7mfd, 50V      |
| C495, 496  | 22371153 | MY, 0.015mfd, 50V, J |
| C497       | 22483470 | EL, 47mfd, 10V       |
| C498, 499  | 22342103 | CD, 0.01mfd, 50V, Z  |
| C500       | 22349103 | CD, 0.01mfd, 50V     |
| C501, 502  | 22488109 | EL, 1mfd, 50V        |
| C503, 504  | 22362101 | CD, 100pF, 50V, K    |
| C505, 506  | 22485100 | EL, 10mfd, 16V       |
| C507, 508  | 22371562 | MY, 5600pF, 50V, J   |
| C509, 510  | 22371472 | MY, 4700pF, 50V, J   |
| C511, 512  | 22371273 | MY, 0.027mfd, 50V, J |
| C513, 514  | 22371473 | MY, 0.047mfd, 50V, J |
| C515, 516  | 22480003 | EL, 0.1mfd, 50V      |
| C517, 518  | 22480006 | EL, 0.33mfd, 50V     |
| C519, 520  | 22485100 | EL, 10mfd, 16V       |
| C521, 522  | 22485100 | EL, 10mfd, 16V       |

| Symbol No. | Part No. | Description          |
|------------|----------|----------------------|
| C523, 524  | 22485100 | EL, 10mfd, 16V       |
| C525, 526  | 22321307 | PP, 4700pF, 100V, G  |
| C527, 528  | 22321309 | PP, 235pF, 100V, G   |
| C529, 530  | 22321308 | PP, 9100pF, 100V, G  |
| C531, 532  | 22321306 | PP, 1500pF, 100V, G  |
| C533, 534  | 22372104 | MY, 0.1mfd, 50V, K   |
| C535, 536  | 22362101 | CD, 100pF, 50V, K    |
| C537, 538  | 22485100 | EL, 10mfd, 16V       |
| C539, 540  | 22361809 | CD, 8pF, 50V, D      |
| C541, 542  | 22349221 | CD, 220pF, 50V, K    |
| C543, 544  | 22362101 | CD, 100pF, 50V, K    |
| C545, 546  | 22349102 | CD, 1000pF, 50V, K   |
| C547, 548  | 22488479 | EL, 4.7mfd, 50V      |
| C549, 550  | 22349222 | CD, 2200pF, 50V, K   |
| C551, 552  | 22485100 | EL, 10mfd, 16V       |
| C553, 554  | 22485100 | EL, 10mfd, 16V       |
| C557, 558  | 22488339 | EL, 3.3mfd, 50V      |
| C559, 560  | 22342103 | CD, 0.01mfd, 50V, Z  |
| C561, 562  | 22342103 | CD, 0.01mfd, 50V, Z  |
| C563, 564  | 22342103 | CD, 0.01mfd, 50V, Z  |
| C565, 566  | 22483101 | EL, 100mfd, 10V      |
| C567, 568  | 22371122 | MY, 1200pF, 50V, J   |
| C569, 570  | 22349821 | CD, 820pF, 50V, K    |
| C571, 572  | 22488339 | EL, 3.3mfd, 50V      |
| C573, 574  | 22483101 | EL, 100mfd, 10V      |
| C575       | 22360484 | CD, 0.047mfd, 50V, Z |
| C601, 602  | 22488479 | EL, 4.7mfd, 50V      |
| C603, 604  | 22488479 | EL, 4.7mfd, 50V      |
| C604, 605  | 22488479 | EL, 4.7mfd, 50V      |
| C607, 608  | 22480006 | EL, 0.33mfd, 50V     |
| C609, 610  | 22488479 | EL, 4.7mfd, 50V      |
| C611, 612  | 22371182 | MY, 1800pF, 50V, J   |
| C613, 614  | 22372682 | MY, 6800pF, 50V, K   |
| C615, 616  | 22371682 | MY, 6800pF, 50V, K   |
| C617, 618  | 22371332 | MY, 3300pF, 50V, J   |
| C619, 620  | 22371822 | MY, 8200pF, 50V, J   |
| C621       | 22380100 | PS, 3300pF, 200V, K  |
| C622       | 22485330 | EL, 33mfd, 16V       |
| C623       | 22371103 | MY, 0.01mfd, 50V, J  |
| C624, 625  | 22349332 | CD, 3300pF, 50V, K   |
| C626       | 22372682 | MY, 6800pF, 50V, K   |
| C627, 628  | 22349332 | CD, 3300pF, 50V, K   |
| C629, 630  | 22349221 | CD, 220pF, 50V, K    |
| C631       | 22380269 | PS, 1800pF, 125V, J  |
| C632       | 22486220 | EL, 22mfd, 25V       |
| C633       | 22349472 | CD, 4700pF, 50V, K   |
| C634       | 22488479 | EL, 4.7mfd, 16V      |
| C635, 636  | 22485330 | EL, 33mfd, 16V       |
| C637, 638  | 22488479 | EL, 4.7mfd, 50V      |

| Symbol No. | Part No. | Description           |
|------------|----------|-----------------------|
| C701       | 22488339 | EL, 3.3mfd, 50V       |
| C702       | 22488478 | EL, 0.47mfd, 50V      |
| C703, 704  | 22371122 | MY, 0.0012mfd, 50V, J |
| C705       | 22349391 | CD, 390pF, 50V, K     |
| C706, 707  | 22371332 | MY, 0.0033mfd, 50V, J |
| C709       | 22440573 | EL, 47000mfd, 5.5V    |
| C710       | 22482102 | EL, 1000mfd, 6.3V     |
| C711       | 22488479 | EL, 4.7mfd, 50V       |
| C712       | 22371333 | MY, 0.033mfd, 50V, J  |
| C713, 714  | 22362101 | CD, 100pF, 50V, K     |
| C715       | 22485330 | EL, 33mfd, 16V        |
| C716, 717  | 22342103 | CD, 0.01mfd, 50V, Z   |
| C718, 719  | 22488109 | EL, 1mfd, 50V         |
| C720       | 22488339 | EL, 3.3mfd, 50V       |
| C721       | 22488479 | EL, 4.7mfd, 50V       |
| C722       | 22488109 | EL, 1mfd, 50V         |
| C723, 724  | 22342473 | CD, 0.047mfd, 50V, Z  |
| C725, 726  | 22362101 | CD, 100pF, 50V, K     |
| C727       | 22488108 | EL, 0.1mfd, 50V       |
| C728       | 22488109 | EL, 1mfd, 50V         |
| C729, 730  | 22349102 | CD, 1000pF, 50V, K    |
| C731       | 22488478 | EL, 0.47mfd, 50V      |
| C732       | 22349391 | CD, 390pF, 50V, K     |
| C733       | 22342103 | CD, 0.01mfd, 50V, Z   |
| C734       | 22488339 | EL, 3.3mfd, 50V       |
| C735       | 22488478 | EL, 0.47mfd, 50V      |
| C736       | 22362151 | CD, 150pF, 50V, K     |
| C737       | 22362470 | CD, 47pF, 50V, K      |
| △ C901     | 22340150 | CD, 4700pF, 400V, M   |
| △ C902     | 22483471 | EL, 470mfd, 16V       |
| △ C903     | 22485330 | EL, 33mfd, 16V        |
| △ C904     | 22486222 | EL, 2200mfd, 25V      |
| △ C905     | 22486102 | EL, 1000mfd, 25V      |
| △ C906     | 22486470 | EL, 47mfd, 50V        |
| △ C907     | 22485100 | EL, 10mfd, 16V        |
| △ C908     | 22483101 | EL, 100mfd, 10V       |
| C909       | 22485101 | EL, 100mfd, 16V       |
| C910       | 22485470 | EL, 47mfd, 16V        |
| C911       | 22485471 | EL, 470mfd, 16V       |
| C912       | 22446472 | EL, 4700mfd, 25V      |
| C913       | 22488109 | EL, 1mfd, 50V         |
| C914       | 22440543 | EL, 10000mfd, 16V     |
| C915       | 22486221 | EL, 220mfd, 25V       |
| C916       | 22485330 | EL, 33mfd, 16V        |
| C917       | 22362101 | CD, 100pF, 50V, K     |
| C918       | 22485101 | EL, 100mfd, 16V       |
| C919       | 22486221 | EL, 220mfd, 25V       |
| C920       | 22485330 | EL, 33mfd, 16V        |
| C921       | 22362101 | CD, 100pF, 50V, K     |
| C922       | 22485100 | EL, 10mfd, 16V        |

| Symbol No.   | Part No. | Description                    |
|--|----------|--------------------------------|
| RESISTORS  |          |                                |
| Resistors are carbon film 1/4W, ±5%, unless otherwise noted. 1K = 1000, 1M = 1000K |          |                                |
| R001   | 22545225 | 2.2M ohm                       |
| R002, 003  | 22545101 | 100 ohm                        |
| R004   | 22545182 | 1.8K ohm                       |
| R101, 102  | 22545102 | 1K ohm                         |
| R103, 104  | 22545473 | 47K ohm                        |
| R105, 106  | 22545563 | 56K ohm                        |
| R107, 108  | 22545102 | 1K ohm                         |
| R109, 110  | 22545123 | 12K ohm                        |
| R111, 112  | 22545151 | 150 ohm                        |
| R113, 114  | 22545123 | 12K ohm                        |
| R115, 116  | 22545473 | 47K ohm                        |
| R117, 118  | 22545104 | 100K ohm                       |
| R121, 122  | 22545101 | 100 ohm                        |
| R123, 124  | 22545103 | 10K ohm                        |
| R125, 126  | 22545473 | 47K ohm                        |
| R129   | 22545471 | 470 ohm                        |
| R130   | 22658622 | 1K ohm, B, Semi-fixed Variable |
| R131, 132  | 22545183 | 18K ohm                        |
| R133, 134  | 22545224 | 220K ohm                       |
| R135   | 22545474 | 470K ohm                       |
| R136   | 22545333 | 33K ohm                        |
| R137   | 22545563 | 56K ohm                        |
| R138   | 22555563 | 56K ohm                        |
| R139, 140  | 22545273 | 27K ohm                        |
| R141, 142  | 22545104 | 100K ohm                       |
| R143, 144  | 22545102 | 1K ohm                         |
| R145, 146  | 22545333 | 33K ohm                        |
| R147, 148  | 22545473 | 47K ohm                        |
| R149, 150  | 22545103 | 10K ohm                        |
| R151, 152  | 22545104 | 100K ohm                       |
| R153, 154  | 22545221 | 220 ohm                        |
| R155, 156  | 22545332 | 3.3K ohm                       |
| R157   | 22545225 | 2.2M ohm                       |
| R158   | 22545103 | 10K ohm                        |
| R159   | 22545474 | 470K ohm                       |
| R160, 161  | 22545103 | 10K ohm                        |
| R162   | 22545103 | 10K ohm                        |
| R163   | 22545222 | 2.2K ohm                       |
| R164   | 22545392 | 3.9K ohm                       |
| R165   | 22545562 | 5.6K ohm                       |
| R166   | 22555106 | 10M ohm                        |
| R167, 168  | 22545473 | 47K ohm                        |
| R169, 170  | 22545473 | 47K ohm                        |
| R171   | 22545101 | 100 ohm                        |
| R172, 173  | 22545153 | 15K ohm                        |
| R174   | 22545153 | 15K ohm                        |

| Symbol No. | Part No. | Description                     |
|------------|----------|---------------------------------|
| R175, 176  | 22545563 | 56K ohm                         |
| R177       | 22545473 | 47K ohm                         |
| R178       | 22545222 | 2.2K ohm                        |
| R179, 180  | 22545223 | 22K ohm                         |
| R181       | 22545473 | 47K ohm                         |
| R182       | 22545332 | 3.3K ohm                        |
| R183       | 22545563 | 56K ohm                         |
| R184       | 22545471 | 470 ohm                         |
| R185       | 22545563 | 56K ohm                         |
| R186, 187  | 22545223 | 22K ohm                         |
| R188       | 22545223 | 22K ohm                         |
| R190       | 22555474 | 470K ohm                        |
| R195, 196  | 22545223 | 22K ohm                         |
| R301       | 22545224 | 220K ohm                        |
| R302, 303  | 22545223 | 22K ohm                         |
| R304, 305  | 22545223 | 22K ohm                         |
| R306, 307  | 22545223 | 22K ohm                         |
| R308       | 22545223 | 22K ohm                         |
| R309, 310  | 22545224 | 220K ohm                        |
| R311, 312  | 22545224 | 220K ohm                        |
| R313       | 22545224 | 220K ohm                        |
| R314       | 22545223 | 22K ohm                         |
| R315, 316  | 22545223 | 22K ohm                         |
| R317       | 22545223 | 22K ohm                         |
| R318       | 22545223 | 22K ohm                         |
| R319       | 22545105 | 1M ohm                          |
| R320       | 22545224 | 220K ohm                        |
| R321, 322  | 22545106 | 10M ohm                         |
| R323       | 22658603 | 50K ohm, B, Semi-fixed Variable |
| R324       | 22545103 | 10K ohm                         |
| R325       | 22545273 | 27K ohm                         |
| R327       | 22658602 | 5K ohm, B, Semi-fixed Variable  |
| R328       | 22545273 | 27K ohm                         |
| R329       | 22545473 | 47K ohm                         |
| R330       | 22545103 | 10K ohm                         |
| R332, 333  | 22545103 | 10K ohm                         |
| R335       | 22545103 | 10K ohm                         |
| R336       | 22545562 | 5.6K ohm                        |
| R337       | 22548103 | 10K ohm                         |
| R338       | 22545273 | 27K ohm                         |
| R339       | 22555122 | 1.2K ohm                        |
| R340, 341  | 22545224 | 220K ohm                        |
| R342, 343  | 22545101 | 100 ohm                         |
| R344, 345  | 22555102 | 1K ohm                          |
| R348       | 22545681 | 680 ohm                         |
| R349, 350  | 22545104 | 100K ohm                        |
| R351, 352  | 22545473 | 47K ohm                         |
| R353, 354  | 22658599 | 10K ohm, B, Semi-fixed Variable |

| Symbol No. | Part No. | Description                     |
|------------|----------|---------------------------------|
| R355, 356  | 22545223 | 22K ohm                         |
| R357, 358  | 22545272 | 2.7K ohm                        |
| R359, 360  | 22545100 | 10 ohm                          |
| R361       | 22545103 | 10K ohm                         |
| R362       | 22658599 | 10K ohm, B, Semi-fixed Variable |
| R363       | 22545273 | 27K ohm                         |
| R364       | 22545104 | 100K ohm                        |
| R365       | 22545102 | 1K ohm                          |
| R366       | 22545154 | 150K ohm                        |
| R367, 368  | 22545223 | 22K ohm                         |
| R369       | 22545103 | 10K ohm                         |
| R372       | 22545103 | 10K ohm                         |
| R373, 374  | 22545225 | 2.2M ohm                        |
| R401, 402  | 22545221 | 220 ohm                         |
| R403, 404  | 22545563 | 56K ohm                         |
| R405, 406  | 22545103 | 10K ohm                         |
| R407, 408  | 22545103 | 10K ohm                         |
| R409, 410  | 22545183 | 18K ohm                         |
| R411, 412  | 22545224 | 220K ohm                        |
| R413, 414  | 22545103 | 10K ohm                         |
| R415, 416  | 22658601 | 500 ohm, B, Semi-fixed Variable |
| R417, 418  | 22545472 | 4.7K ohm                        |
| R419, 420  | 22545472 | 4.7K ohm                        |
| R421, 422  | 22545473 | 47K ohm                         |
| R423, 424  | 22545473 | 47K ohm                         |
| R425, 426  | 22545331 | 330 ohm                         |
| R427, 428  | 22545104 | 100K ohm                        |
| R429, 430  | 22546103 | 10K ohm                         |
| R431, 432  | 22546104 | 100K ohm                        |
| R433, 434  | 22546104 | 100K ohm                        |
| R435, 436  | 22546222 | 2.2K ohm                        |
| R437, 438  | 22546103 | 10K ohm                         |
| R439, 440  | 22545683 | 68K ohm                         |
| R441, 442  | 22545473 | 47K ohm                         |
| R443, 444  | 22545102 | 1K ohm                          |
| R445, 446  | 22545473 | 47K ohm                         |
| R447, 448  | 22545224 | 220K ohm                        |
| R449, 450  | 22545823 | 82K ohm                         |
| R451, 452  | 22545393 | 39K ohm                         |
| R453, 454  | 22658603 | 50K ohm, B, Semi-fixed Variable |
| R455, 456  | 22545333 | 33K ohm                         |
| R457, 458  | 22658603 | 50K ohm, B, Semi-fixed Variable |
| R459, 460  | 22545221 | 220 ohm                         |
| R461, 462  | 22545224 | 220K ohm                        |
| R463, 464  | 22545622 | 5.6K ohm                        |
| R465, 466  | 22656335 | 3.3M ohm                        |
| R467, 468  | 22545563 | 56K ohm                         |

| Symbol No. | Part No. | Description                     |
|------------|----------|---------------------------------|
| R479, 470  | 22658599 | 10K ohm, B, Semi-fixed Variable |
| R471, 472  | 22545183 | 18K ohm                         |
| R473, 474  | 22545154 | 150K ohm                        |
| R475, 476  | 22545274 | 270K ohm                        |
| R477, 478  | 22545332 | 3.3K ohm                        |
| R479, 480  | 22545473 | 47K ohm                         |
| R481, 482  | 22545181 | 180 ohm                         |
| R483, 484  | 22545473 | 47K ohm                         |
| R485, 486  | 22658599 | 10K ohm, B, Semi-fixed Variable |
| R487, 488  | 22545106 | 10M ohm                         |
| R489, 490  | 22545106 | 10M ohm                         |
| R491, 492  | 22545106 | 10M ohm                         |
| R493, 494  | 22545473 | 47K ohm                         |
| R495, 496  | 22550235 | 2K ohm, ±2%                     |
| R497, 498  | 22545471 | 470 ohm                         |
| R499, 500  | 22555106 | 10M ohm                         |
| R501, 502  | 22545104 | 270K ohm                        |
| R503, 504  | 22545274 | 270K ohm                        |
| R505, 506  | 22545154 | 150K ohm                        |
| R507, 508  | 22545332 | 3.3K ohm                        |
| R509, 510  | 22545473 | 47K ohm                         |
| R511, 512  | 22545181 | 180 ohm                         |
| R513, 514  | 22545473 | 47K ohm                         |
| R515, 516  | 22545222 | 2.2K ohm                        |
| R517, 518  | 22545222 | 2.2K ohm                        |
| R519, 520  | 22545563 | 56K ohm                         |
| R521, 522  | 22545332 | 3.3K ohm                        |
| R523, 524  | 22545684 | 680K ohm                        |
| R527, 528  | 22545104 | 100K ohm                        |
| R529, 530  | 22550235 | 2K ohm, ±2%                     |
| R531, 532  | 22545473 | 47K ohm                         |
| R533, 534  | 22545102 | 1K ohm                          |
| R537, 538  | 22545683 | 68K ohm                         |
| R539, 540  | 22545473 | 47K ohm                         |
| R541, 542  | 22545224 | 220K ohm                        |
| R543, 544  | 22545823 | 82K ohm                         |
| R545, 546  | 22545221 | 220 ohm                         |
| R547, 548  | 22545393 | 39K ohm                         |
| R549, 550  | 22658603 | 50K ohm, B, Semi-fixed Variable |
| R551, 552  | 22545333 | 33K ohm                         |
| R553, 554  | 22658603 | 50K ohm, B, Semi-fixed Variable |
| R555, 556  | 22545335 | 3.3M ohm                        |
| R557, 558  | 22545822 | 8.2K ohm                        |
| R559, 560  | 22545224 | 220K ohm                        |
| R561, 562  | 22545563 | 56K ohm                         |
| R563, 564  | 22658599 | 10K ohm, B, Semi-fixed Variable |
| R565, 566  | 22545183 | 18K ohm                         |
| R567, 568  | 22545106 | 10M ohm                         |

| Symbol No. | Part No. | Description                     |
|------------|----------|---------------------------------|
| R569, 570  | 22545104 | 100K ohm                        |
| R571, 572  | 22545106 | 10M ohm                         |
| R573, 574  | 22545106 | 10M ohm                         |
| R575, 576  | 22545106 | 10M ohm                         |
| R577, 578  | 22545106 | 10M ohm                         |
| R579, 580  | 22545106 | 10M ohm                         |
| R581       | 22545224 | 220K ohm                        |
| R582       | 22545103 | 10K ohm                         |
| R583, 584  | 22545224 | 220K ohm                        |
| R585, 586  | 22545124 | 120K ohm                        |
| R587, 588  | 22545103 | 10K ohm                         |
| R589, 590  | 22545224 | 220K ohm                        |
| R591       | 22545224 | 220K ohm                        |
| R592       | 22545471 | 470 ohm                         |
| R593, 594  | 22545102 | 1K ohm                          |
| R595, 596  | 22545105 | 1M ohm                          |
| R597       | 22545223 | 22K ohm                         |
| R599, 600  | 22545105 | 1M ohm                          |
| R601, 602  | 22555106 | 10M ohm                         |
| R603, 604  | 22658599 | 10K ohm, B, Semi-fixed Variable |
| R605, 606  | 22545473 | 47K ohm                         |
| R607, 608  | 22545222 | 2.2K ohm                        |
| R609, 610  | 22545273 | 27K ohm                         |
| R611, 612  | 22555824 | 820K ohm                        |
| R613, 614  | 22545273 | 27K ohm                         |
| R615, 616  | 22545394 | 390K ohm                        |
| R617, 618  | 22545273 | 27K ohm                         |
| R619, 620  | 22545225 | 2.2M ohm                        |
| R621, 622  | 22545225 | 2.2M ohm                        |
| R623, 624  | 22545225 | 2.2M ohm                        |
| R625, 626  | 22545473 | 47K ohm                         |
| R627, 628  | 22545154 | 150K ohm                        |
| R629, 630  | 22545103 | 10K ohm                         |
| R631, 632  | 22545273 | 27K ohm                         |
| R633, 634  | 22545273 | 27K ohm                         |
| R635, 636  | 22545683 | 68K ohm                         |
| R637, 638  | 22545273 | 27K ohm                         |
| R639, 640  | 22545274 | 270K ohm                        |
| R641, 642  | 22545274 | 270K ohm                        |
| R643, 644  | 22545332 | 3.3K ohm                        |
| R645, 646  | 22545103 | 10K ohm                         |
| R647, 648  | 22545104 | 100K ohm                        |
| R649, 650  | 22545472 | 4.7K ohm                        |
| R651, 652  | 22545221 | 220 ohm                         |
| R653, 654  | 22545223 | 22K ohm                         |
| R655, 656  | 22545332 | 3.3K ohm                        |
| R657, 658  | 22545472 | 4.7K ohm                        |
| R659, 660  | 22545223 | 22K ohm                         |
| R661, 662  | 22545103 | 10K ohm                         |
| R663, 664  | 22545153 | 15K ohm                         |
| R665, 666  | 22545101 | 100 ohm                         |
| R667, 668  | 22545223 | 22K ohm                         |

| Symbol No. | Part No. | Description                     |
|------------|----------|---------------------------------|
| R669, 670  | 22545223 | 22K ohm                         |
| R671, 672  | 22555689 | 6.8 ohm                         |
| R673, 674  | 22545153 | 15K ohm                         |
| R675, 676  | 22545330 | 33 ohm                          |
| R677       | 22545103 | 10K ohm                         |
| R678       | 22545223 | 22K ohm                         |
| R679       | 22545104 | 100K ohm                        |
| R680       | 22545103 | 10K ohm                         |
| R681, 682  | 22658603 | 50K ohm, B, Semi-fixed Variable |
| R683       | 22500189 | 1.7 ohm, Floating               |
| R685       | 22651579 | 50K ohm, MN, Variable, Balance  |
| R686       | 22657269 | 50K ohm, A, Variable, REC Level |
| R687, 688  | 22545473 | 47K ohm                         |
| R689, 690  | 22545473 | 47K ohm                         |
| R691       | 22651580 | 10K ohm, B, Variable, Output    |
| R692       | 22545103 | 10K ohm                         |
| R693, 694  | 22545223 | 22K ohm                         |
| R695, 696  | 22545333 | 33K ohm                         |
| R697, 698  | 22658280 | 22K ohm, B, Semi-fixed Variable |
| R699       | 22545224 | 220K ohm                        |
| R701       | 22545103 | 10K ohm                         |
| R702       | 22545104 | 100K ohm                        |
| R703       | 22545102 | 1K ohm                          |
| R705, 706  | 22545224 | 220K ohm                        |
| R707, 708  | 22545224 | 220K ohm                        |
| R709       | 22545224 | 220K ohm                        |
| R710       | 22545104 | 100K ohm                        |
| R711       | 22545223 | 22K ohm                         |
| R712       | 22545104 | 100K ohm                        |
| R713       | 22545472 | 4.7K ohm                        |
| R714       | 22545104 | 100K ohm                        |
| R715       | 22545103 | 10K ohm                         |
| R716       | 22545104 | 100K ohm                        |
| R717       | 22545473 | 47K ohm                         |
| R718       | 22545104 | 100K ohm                        |
| R719       | 22545154 | 150K ohm                        |
| R720       | 22545332 | 3.3K ohm                        |
| R721       | 22545223 | 22K ohm                         |
| R722, 723  | 22545104 | 100K ohm                        |
| R724, 725  | 22545104 | 100K ohm                        |
| R726       | 22545104 | 100K ohm                        |
| R727       | 22545223 | 22K ohm                         |
| R728       | 22545103 | 10K ohm                         |
| R729       | 22545101 | 100 ohm                         |
| R730       | 22658599 | 10K ohm, B, Semi-fixed Variable |
| R731       | 22545182 | 1.8K ohm                        |
| R732       | 22658601 | 500 ohm, B, Semi-fixed Variable |

| Symbol No. | Part No. | Description                     |
|------------|----------|---------------------------------|
| R733       | 22545102 | 1K ohm                          |
| R734       | 22545103 | 10K ohm                         |
| R735       | 22545153 | 15K ohm                         |
| R736       | 22545333 | 33K ohm                         |
| R737       | 22545224 | 220K ohm                        |
| R738       | 22545472 | 4.7K ohm                        |
| R739       | 22545183 | 18K ohm                         |
| R740, 741  | 22545472 | 4.7K ohm                        |
| R742, 743  | 22545473 | 47K ohm                         |
| R744, 745  | 22545224 | 220K ohm                        |
| R746       | 22545224 | 220K ohm                        |
| R747       | 22556471 | 470 ohm                         |
| R748, 749  | 22545224 | 220K ohm                        |
| R750       | 22545103 | 10K ohm                         |
| R751       | 22545223 | 22K ohm                         |
| R752, 753  | 22545103 | 10K ohm                         |
| R754, 755  | 22545103 | 10K ohm                         |
| R756, 757  | 22545103 | 10K ohm                         |
| R758, 760  | 22545332 | 3.3K ohm                        |
| R759, 761  | 22545223 | 22K ohm                         |
| R762       | 22545332 | 3.3K ohm                        |
| R763       | 22545223 | 22K ohm                         |
| R764, 765  | 22545473 | 47K ohm                         |
| R766       | 22545223 | 22K ohm                         |
| R767       | 22547471 | 470 ohm, 1/2W                   |
| R768       | 22620016 | 22 ohm, 1/4W                    |
| R769       | 22547471 | 470 ohm, 1/2W                   |
| R770       | 22545102 | 1K ohm                          |
| R771, 773  | 22658831 | 20K ohm, B, Semi-fixed Variable |
| R772       | 22545682 | 6.8K ohm                        |
| R774       | 22545472 | 4.7K ohm                        |
| R775       | 22545104 | 100K ohm                        |
| R776       | 22545274 | 270K ohm                        |
| R777       | 22545224 | 220K ohm                        |
| R778, 780  | 22545104 | 100K ohm                        |
| R779       | 22545224 | 220K ohm                        |
| R781       | 22545223 | 22K ohm                         |
| R782       | 22555155 | 1.5M ohm                        |
| R783       | 22555624 | 820K ohm                        |
| R784       | 22545104 | 100K ohm                        |
| R785       | 22545103 | 10K ohm                         |
| R786       | 22545104 | 100K ohm                        |
| R787, 788  | 22545473 | 47K ohm                         |
| R789       | 22545104 | 100K ohm                        |
| R790, 791  | 22545473 | 47K ohm                         |
| R792, 793  | 22545473 | 47K ohm                         |
| R794       | 22545473 | 47K ohm                         |
| R795       | 22545104 | 100K ohm                        |
| R796       | 22545101 | 100 ohm                         |
| R797       | 22545663 | 56K ohm                         |
| R798       | 22545103 | 10K ohm                         |
| R799, 800  | 22545105 | 1M ohm                          |
| R801, 802  | 22545223 | 22K ohm                         |

| Symbol No. | Part No. | Description                        |
|------------|----------|------------------------------------|
| R803, 804  | 22545223 | 22K ohm                            |
| R806       | 22545223 | 22K ohm                            |
| R806, 807  | 22545103 | 10K ohm                            |
| R808       | 22545103 | 10K ohm                            |
| R809       | 22545223 | 22K ohm                            |
| R810       | 22545224 | 220K ohm                           |
| R811       | 22545153 | 15K ohm                            |
| R812       | 22545103 | 10K ohm                            |
| R813       | 22545274 | 270K ohm                           |
| R814, 815  | 22545104 | 100K ohm                           |
| R816       | 22545223 | 22K ohm                            |
| R817       | 22545334 | 330K ohm                           |
| R818       | 22555102 | 1K ohm                             |
| R819       | 22545103 | 10K ohm                            |
| R820       | 22545153 | 15K ohm                            |
| R821       | 22545103 | 10K ohm                            |
| R822, 823  | 22545104 | 100K ohm                           |
| R824       | 22545473 | 47K ohm                            |
| R825       | 22545103 | 10K ohm                            |
| R826       | 22545104 | 100K ohm                           |
| R827, 828  | 22545152 | 1.5K ohm                           |
| R829, 830  | 22545152 | 1.5K ohm                           |
| R831       | 22545104 | 100K ohm                           |
| R832       | 22545103 | 10K ohm                            |
| R833, 834  | 22545103 | 10K ohm                            |
| R835, 836  | 22545104 | 100K ohm                           |
| R837       | 22545103 | 10K ohm                            |
| R838       | 22545154 | 150K ohm                           |
| R839, 840  | 22545103 | 10K ohm                            |
| R841       | 22545394 | 390K ohm                           |
| R842       | 22555232 | 22K ohm                            |
| R843, 844  | 22555323 | 3.3K ohm                           |
| R845       | 22545104 | 100K ohm                           |
| R846       | 22545473 | 47K ohm                            |
| R847       | 22545102 | 1K ohm                             |
| R848       | 22545223 | 22K ohm                            |
| R849, 850  | 22545102 | 1K ohm                             |
| R851       | 22545102 | 1K ohm                             |
| R852       | 22545102 | 22K ohm                            |
| R853       | 22570298 | 18 ohm, 2W, Metal Film             |
| R854       | 22545562 | 5.6K ohm                           |
| R855       | 22545102 | 1K ohm                             |
| R856       | 22545123 | 12K ohm                            |
| R857       | 22585599 | 10K ohm, B, Semi-fixed<br>Variable |
| R858       | 22545472 | 4.7K ohm                           |
| R859       | 22560176 | 72 ohm, 5W, Fusible                |
| R860, 861  | 22545471 | 470 ohm                            |
| R862, 864  | 22545471 | 470 ohm                            |
| R863, 865  | 22545223 | 22K ohm                            |
| R866       | 22545681 | 680 ohm                            |
| R867       | 22545101 | 100 ohm                            |
| R868       | 22545181 | 180 ohm                            |
| R869       | 22545221 | 220 ohm                            |

| Symbol No.  | Part No. | Description      |
|-------------|----------|------------------|
| R870, 871   | 22545181 | 180 ohm          |
| R872, 873   | 22545181 | 180 ohm          |
| R874        | 22545181 | 180 ohm          |
| R875        | 22545221 | 220 ohm          |
| R876        | 22545181 | 180 ohm          |
| R877        | 22545271 | 270 ohm          |
| R878, 879   | 22548151 | 150 ohm          |
| R880, 881   | 22545271 | 270 ohm          |
| R882, 883   | 22545821 | 820 ohm          |
| R884        | 22545181 | 180 ohm          |
| R885        | 22545151 | 150 ohm          |
| R886        | 22546821 | 820 ohm          |
| R887        | 22545104 | 100K ohm         |
| R888, 889   | 22545473 | 47K ohm          |
| R890        | 22545104 | 100K ohm         |
| R891        | 22545223 | 22K ohm          |
| R892        | 22545472 | 4.7K ohm         |
| R893        | 22545223 | 22K ohm          |
| R894, 895   | 22545473 | 47K ohm          |
| R896        | 22545104 | 100K ohm         |
| R897, 898   | 22545225 | 2.2M ohm         |
| R899        | 22545225 | 2.2M ohm         |
| R900        | 22545473 | 47K ohm          |
| R901        | 22500118 | 3.3 ohm, Fusible |
| R902, 903   | 22500118 | 2.2 ohm, Fusible |
| R904        | 22547102 | 1K ohm, 1/2W     |
| R905        | 22545101 | 100 ohm          |
| R906        | 22547272 | 2.7K ohm, 1/2W   |
| R907        | 22547681 | 680 ohm, 1/2W    |
| R908        | 22547100 | 10 ohm, 1/2W     |
| R909        | 22545103 | 10K ohm          |
| R910        | 22547471 | 470 ohm, 1/2W    |
| R911        | 22545680 | 68 ohm           |
| R912        | 22546392 | 3.9K ohm         |
| R913        | 22545471 | 470 ohm          |
| R914, 915   | 22545222 | 2.2K ohm         |
| R916, 917   | 22545222 | 2.2K ohm         |
| R918        | 22545102 | 1K ohm           |
| R919, 920   | 22545222 | 2.2K ohm         |
| R921, 922   | 22545222 | 2.2K ohm         |
| R923        | 22545102 | 1K ohm           |
| ACCESSORIES |          |                  |
| AC01        | 22903634 | Owner's Manual   |
| AC02        | 22990756 | Head Cleaner     |
| AC03        | 22164775 | Connector Cord   |

| Symbol No. | Part No. | Description |
|------------|----------|-------------|
|            |          |             |

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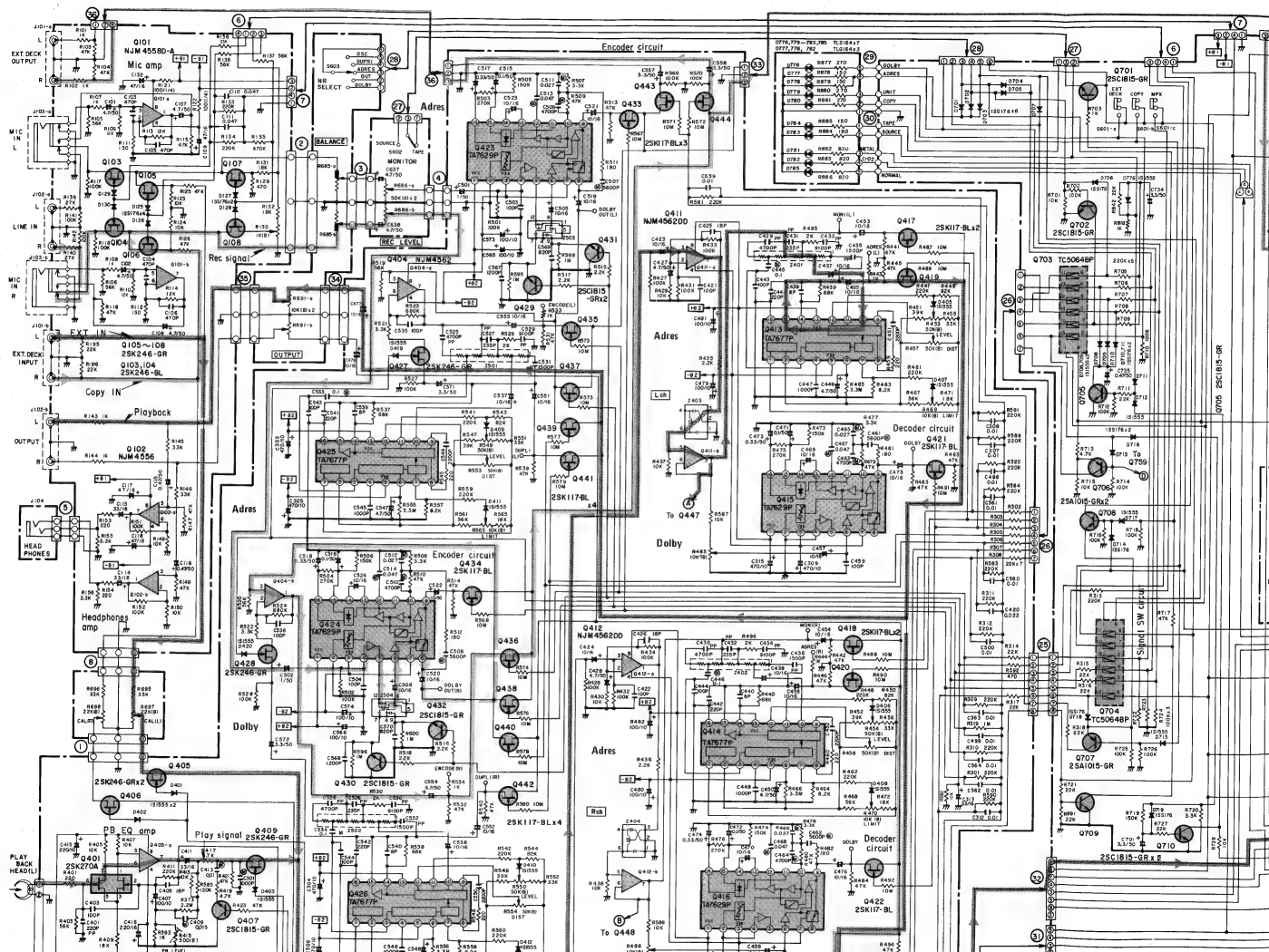
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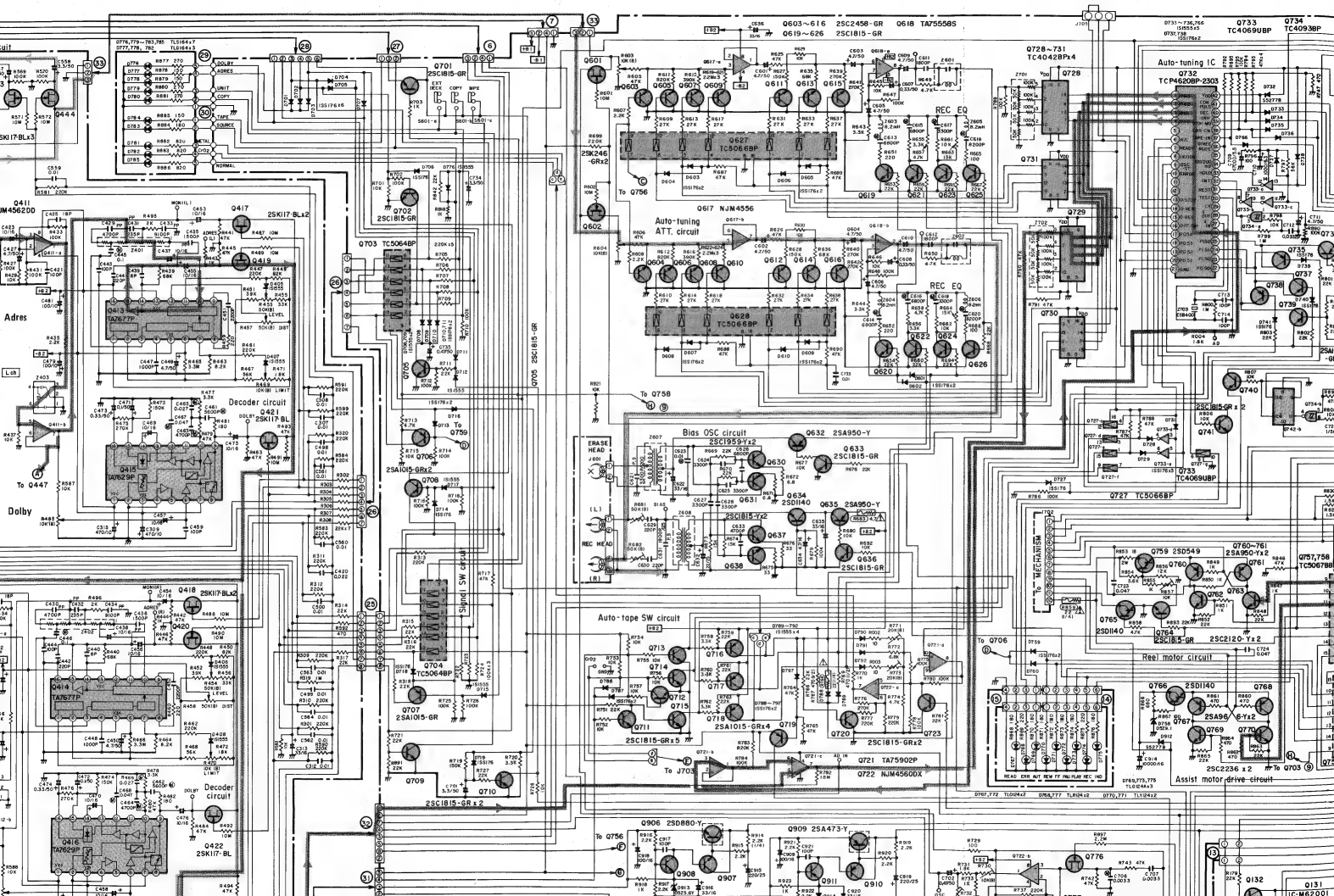
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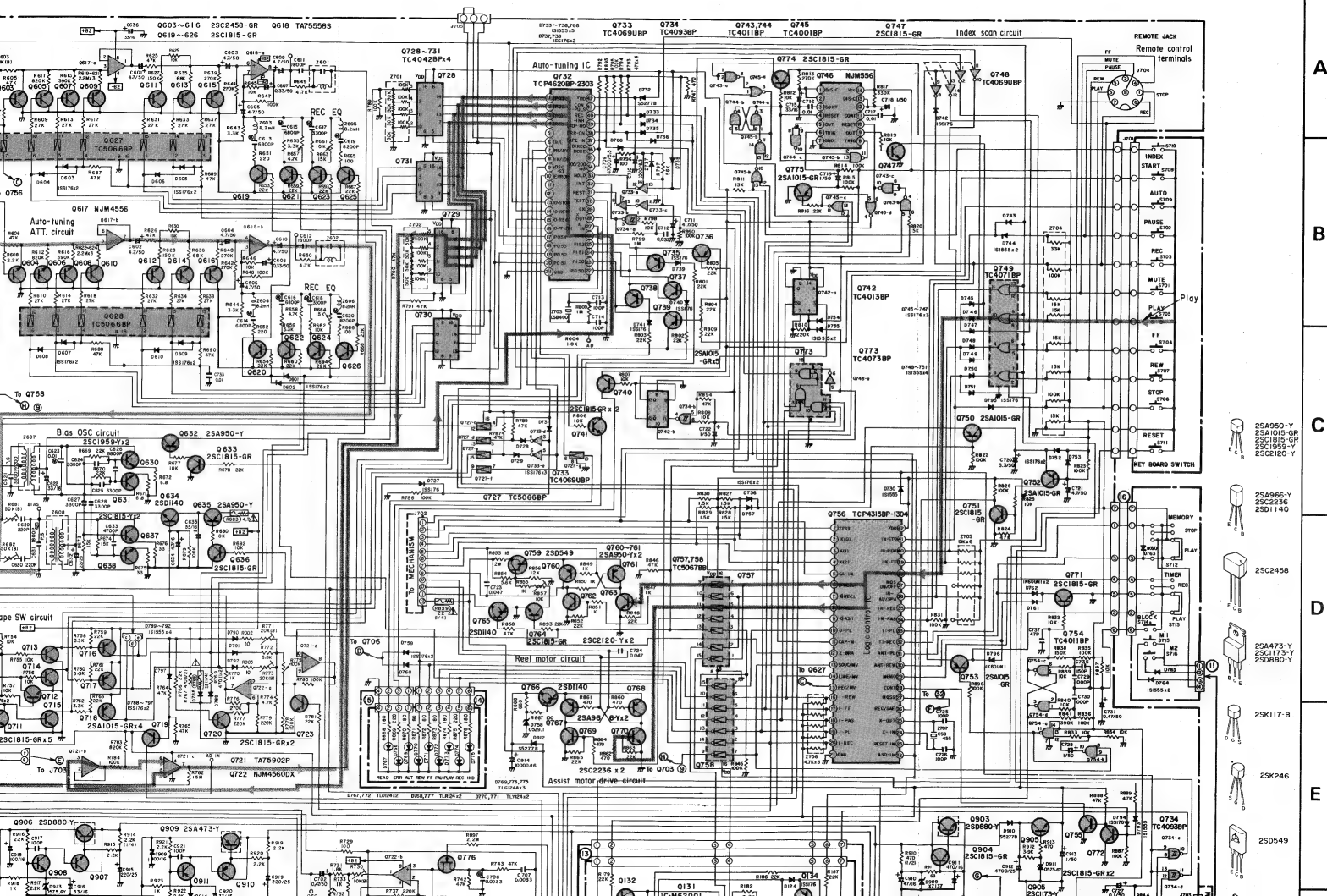
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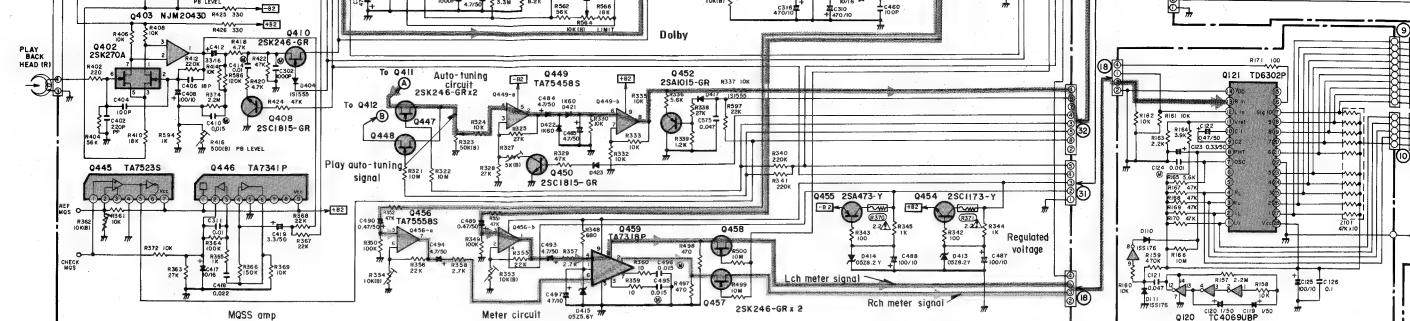
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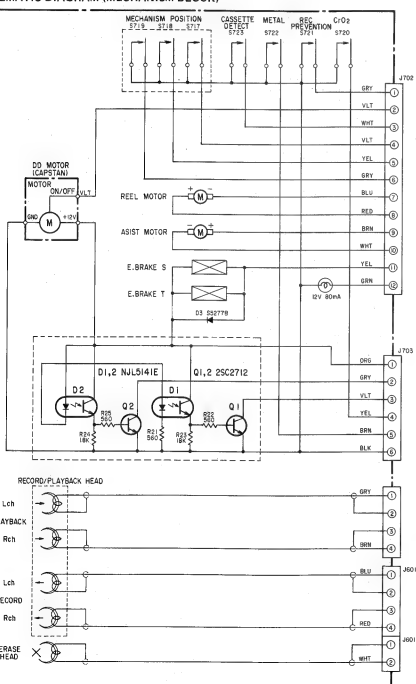


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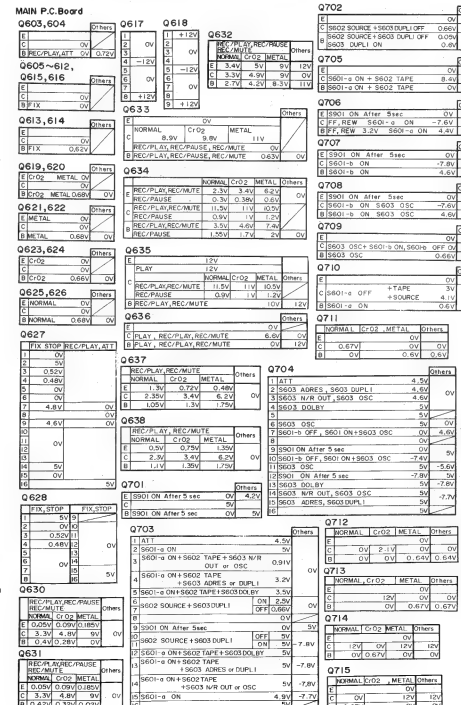
G

SCHEMATIC DIAGRAM (MECHANISM BLOCK)



I

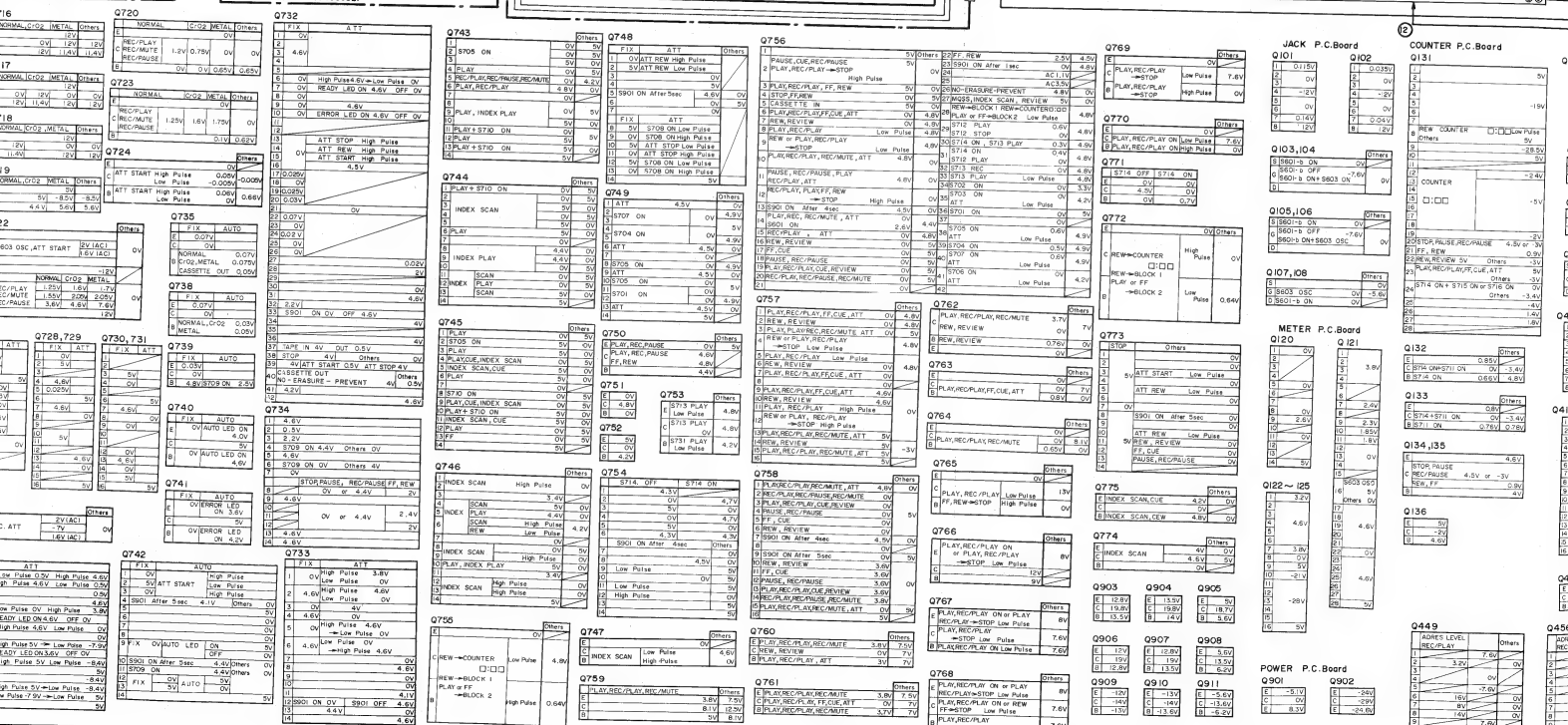
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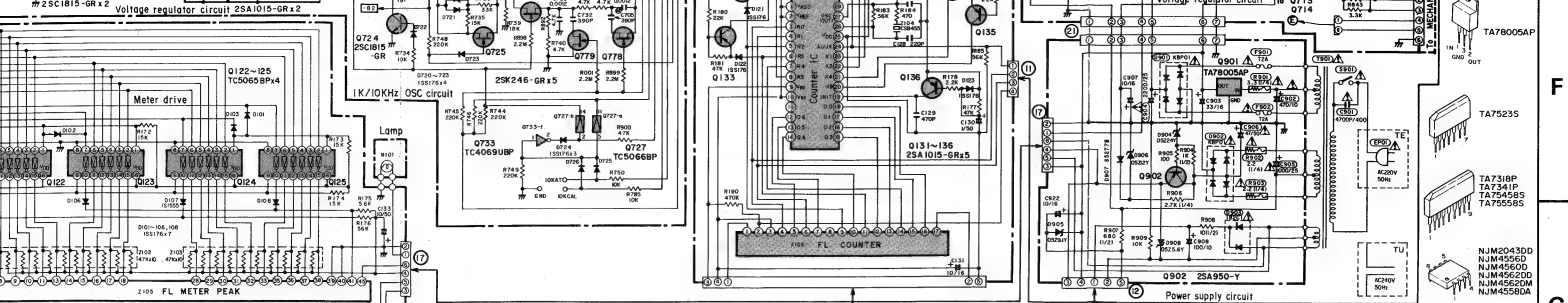


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5





| Q748 |     |     | Q756 |                   |     |
|------|-----|-----|------|-------------------|-----|
| Q1   | FIX | ATT | Q1   | PLAY REC/RE/PAUSE | 0.5 |
| Q2   | FIX | ATT | Q2   | PLAY REC/RE/PAUSE | 0.5 |
| Q3   | FIX | ATT | Q3   | PLAY REC/RE/PAUSE | 0.5 |
| Q4   | FIX | ATT | Q4   | PLAY REC/RE/PAUSE | 0.5 |
| Q5   | FIX | ATT | Q5   | PLAY REC/RE/PAUSE | 0.5 |
| Q6   | FIX | ATT | Q6   | PLAY REC/RE/PAUSE | 0.5 |
| Q7   | FIX | ATT | Q7   | PLAY REC/RE/PAUSE | 0.5 |
| Q8   | FIX | ATT | Q8   | PLAY REC/RE/PAUSE | 0.5 |
| Q9   | FIX | ATT | Q9   | PLAY REC/RE/PAUSE | 0.5 |
| Q10  | FIX | ATT | Q10  | PLAY REC/RE/PAUSE | 0.5 |
| Q11  | FIX | ATT | Q11  | PLAY REC/RE/PAUSE | 0.5 |
| Q12  | FIX | ATT | Q12  | PLAY REC/RE/PAUSE | 0.5 |
| Q13  | FIX | ATT | Q13  | PLAY REC/RE/PAUSE | 0.5 |
| Q14  | FIX | ATT | Q14  | PLAY REC/RE/PAUSE | 0.5 |
| Q15  | FIX | ATT | Q15  | PLAY REC/RE/PAUSE | 0.5 |
| Q16  | FIX | ATT | Q16  | PLAY REC/RE/PAUSE | 0.5 |
| Q17  | FIX | ATT | Q17  | PLAY REC/RE/PAUSE | 0.5 |
| Q18  | FIX | ATT | Q18  | PLAY REC/RE/PAUSE | 0.5 |
| Q19  | FIX | ATT | Q19  | PLAY REC/RE/PAUSE | 0.5 |
| Q20  | FIX | ATT | Q20  | PLAY REC/RE/PAUSE | 0.5 |
| Q21  | FIX | ATT | Q21  | PLAY REC/RE/PAUSE | 0.5 |
| Q22  | FIX | ATT | Q22  | PLAY REC/RE/PAUSE | 0.5 |
| Q23  | FIX | ATT | Q23  | PLAY REC/RE/PAUSE | 0.5 |
| Q24  | FIX | ATT | Q24  | PLAY REC/RE/PAUSE | 0.5 |
| Q25  | FIX | ATT | Q25  | PLAY REC/RE/PAUSE | 0.5 |
| Q26  | FIX | ATT | Q26  | PLAY REC/RE/PAUSE | 0.5 |
| Q27  | FIX | ATT | Q27  | PLAY REC/RE/PAUSE | 0.5 |
| Q28  | FIX | ATT | Q28  | PLAY REC/RE/PAUSE | 0.5 |
| Q29  | FIX | ATT | Q29  | PLAY REC/RE/PAUSE | 0.5 |
| Q30  | FIX | ATT | Q30  | PLAY REC/RE/PAUSE | 0.5 |
| Q31  | FIX | ATT | Q31  | PLAY REC/RE/PAUSE | 0.5 |
| Q32  | FIX | ATT | Q32  | PLAY REC/RE/PAUSE | 0.5 |
| Q33  | FIX | ATT | Q33  | PLAY REC/RE/PAUSE | 0.5 |
| Q34  | FIX | ATT | Q34  | PLAY REC/RE/PAUSE | 0.5 |
| Q35  | FIX | ATT | Q35  | PLAY REC/RE/PAUSE | 0.5 |
| Q36  | FIX | ATT | Q36  | PLAY REC/RE/PAUSE | 0.5 |
| Q37  | FIX | ATT | Q37  | PLAY REC/RE/PAUSE | 0.5 |
| Q38  | FIX | ATT | Q38  | PLAY REC/RE/PAUSE | 0.5 |
| Q39  | FIX | ATT | Q39  | PLAY REC/RE/PAUSE | 0.5 |
| Q40  | FIX | ATT | Q40  | PLAY REC/RE/PAUSE | 0.5 |
| Q41  | FIX | ATT | Q41  | PLAY REC/RE/PAUSE | 0.5 |
| Q42  | FIX | ATT | Q42  | PLAY REC/RE/PAUSE | 0.5 |
| Q43  | FIX | ATT | Q43  | PLAY REC/RE/PAUSE | 0.5 |
| Q44  | FIX | ATT | Q44  | PLAY REC/RE/PAUSE | 0.5 |
| Q45  | FIX | ATT | Q45  | PLAY REC/RE/PAUSE | 0.5 |
| Q46  | FIX | ATT | Q46  | PLAY REC/RE/PAUSE | 0.5 |
| Q47  | FIX | ATT | Q47  | PLAY REC/RE/PAUSE | 0.5 |
| Q48  | FIX | ATT | Q48  | PLAY REC/RE/PAUSE | 0.5 |
| Q49  | FIX | ATT | Q49  | PLAY REC/RE/PAUSE | 0.5 |
| Q50  | FIX | ATT | Q50  | PLAY REC/RE/PAUSE | 0.5 |
| Q51  | FIX | ATT | Q51  | PLAY REC/RE/PAUSE | 0.5 |
| Q52  | FIX | ATT | Q52  | PLAY REC/RE/PAUSE | 0.5 |
| Q53  | FIX | ATT | Q53  | PLAY REC/RE/PAUSE | 0.5 |
| Q54  | FIX | ATT | Q54  | PLAY REC/RE/PAUSE | 0.5 |
| Q55  | FIX | ATT | Q55  | PLAY REC/RE/PAUSE | 0.5 |
| Q56  | FIX | ATT | Q56  | PLAY REC/RE/PAUSE | 0.5 |
| Q57  | FIX | ATT | Q57  | PLAY REC/RE/PAUSE | 0.5 |
| Q58  | FIX | ATT | Q58  | PLAY REC/RE/PAUSE | 0.5 |
| Q59  | FIX | ATT | Q59  | PLAY REC/RE/PAUSE | 0.5 |
| Q60  | FIX | ATT | Q60  | PLAY REC/RE/PAUSE | 0.5 |
| Q61  | FIX | ATT | Q61  | PLAY REC/RE/PAUSE | 0.5 |
| Q62  | FIX | ATT | Q62  | PLAY REC/RE/PAUSE | 0.5 |
| Q63  | FIX | ATT | Q63  | PLAY REC/RE/PAUSE | 0.5 |
| Q64  | FIX | ATT | Q64  | PLAY REC/RE/PAUSE | 0.5 |
| Q65  | FIX | ATT | Q65  | PLAY REC/RE/PAUSE | 0.5 |
| Q66  | FIX | ATT | Q66  | PLAY REC/RE/PAUSE | 0.5 |
| Q67  | FIX | ATT | Q67  | PLAY REC/RE/PAUSE | 0.5 |
| Q68  | FIX | ATT | Q68  | PLAY REC/RE/PAUSE | 0.5 |
| Q69  | FIX | ATT | Q69  | PLAY REC/RE/PAUSE | 0.5 |
| Q70  | FIX | ATT | Q70  | PLAY REC/RE/PAUSE | 0.5 |
| Q71  | FIX | ATT | Q71  | PLAY REC/RE/PAUSE | 0.5 |
| Q72  | FIX | ATT | Q72  | PLAY REC/RE/PAUSE | 0.5 |
| Q73  | FIX | ATT | Q73  | PLAY REC/RE/PAUSE | 0.5 |
| Q74  | FIX | ATT | Q74  | PLAY REC/RE/PAUSE | 0.5 |
| Q75  | FIX | ATT | Q75  | PLAY REC/RE/PAUSE | 0.5 |
| Q76  | FIX | ATT | Q76  | PLAY REC/RE/PAUSE | 0.5 |
| Q77  | FIX | ATT | Q77  | PLAY REC/RE/PAUSE | 0.5 |
| Q78  | FIX | ATT | Q78  | PLAY REC/RE/PAUSE | 0.5 |
| Q79  | FIX | ATT | Q79  | PLAY REC/RE/PAUSE | 0.5 |
| Q80  | FIX | ATT | Q80  | PLAY REC/RE/PAUSE | 0.5 |
| Q81  | FIX | ATT | Q81  | PLAY REC/RE/PAUSE | 0.5 |
| Q82  | FIX | ATT | Q82  | PLAY REC/RE/PAUSE | 0.5 |
| Q83  | FIX | ATT | Q83  | PLAY REC/RE/PAUSE | 0.5 |
| Q84  | FIX | ATT | Q84  | PLAY REC/RE/PAUSE | 0.5 |
| Q85  | FIX | ATT | Q85  | PLAY REC/RE/PAUSE | 0.5 |
| Q86  | FIX | ATT | Q86  | PLAY REC/RE/PAUSE | 0.5 |
| Q87  | FIX | ATT | Q87  | PLAY REC/RE/PAUSE | 0.5 |
| Q88  | FIX | ATT | Q88  | PLAY REC/RE/PAUSE | 0.5 |
| Q89  | FIX | ATT | Q89  | PLAY REC/RE/PAUSE | 0.5 |
| Q90  | FIX | ATT | Q90  | PLAY REC/RE/PAUSE | 0.5 |
| Q91  | FIX | ATT | Q91  | PLAY REC/RE/PAUSE | 0.5 |
| Q92  | FIX | ATT | Q92  | PLAY REC/RE/PAUSE | 0.5 |
| Q93  | FIX | ATT | Q93  | PLAY REC/RE/PAUSE | 0.5 |
| Q94  | FIX | ATT | Q94  | PLAY REC/RE/PAUSE | 0.5 |
| Q95  | FIX | ATT | Q95  | PLAY REC/RE/PAUSE | 0.5 |
| Q96  | FIX | ATT | Q96  | PLAY REC/RE/PAUSE | 0.5 |
| Q97  | FIX | ATT | Q97  | PLAY REC/RE/PAUSE | 0.5 |
| Q98  | FIX | ATT | Q98  | PLAY REC/RE/PAUSE | 0.5 |
| Q99  | FIX | ATT | Q99  | PLAY REC/RE/PAUSE | 0.5 |
| Q100 | FIX | ATT | Q100 | PLAY REC/RE/PAUSE | 0.5 |

IC Board 4

IC03

|     |    |
|-----|----|
| 1   | 0V |
| 2   | 0V |
| 3   | 0V |
| 4   | 0V |
| 5   | 0V |
| 6   | 0V |
| 7   | 0V |
| 8   | 0V |
| 9   | 0V |
| 10  | 0V |
| 11  | 0V |
| 12  | 0V |
| 13  | 0V |
| 14  | 0V |
| 15  | 0V |
| 16  | 0V |
| 17  | 0V |
| 18  | 0V |
| 19  | 0V |
| 20  | 0V |
| 21  | 0V |
| 22  | 0V |
| 23  | 0V |
| 24  | 0V |
| 25  | 0V |
| 26  | 0V |
| 27  | 0V |
| 28  | 0V |
| 29  | 0V |
| 30  | 0V |
| 31  | 0V |
| 32  | 0V |
| 33  | 0V |
| 34  | 0V |
| 35  | 0V |
| 36  | 0V |
| 37  | 0V |
| 38  | 0V |
| 39  | 0V |
| 40  | 0V |
| 41  | 0V |
| 42  | 0V |
| 43  | 0V |
| 44  | 0V |
| 45  | 0V |
| 46  | 0V |
| 47  | 0V |
| 48  | 0V |
| 49  | 0V |
| 50  | 0V |
| 51  | 0V |
| 52  | 0V |
| 53  | 0V |
| 54  | 0V |
| 55  | 0V |
| 56  | 0V |
| 57  | 0V |
| 58  | 0V |
| 59  | 0V |
| 60  | 0V |
| 61  | 0V |
| 62  | 0V |
| 63  | 0V |
| 64  | 0V |
| 65  | 0V |
| 66  | 0V |
| 67  | 0V |
| 68  | 0V |
| 69  | 0V |
| 70  | 0V |
| 71  | 0V |
| 72  | 0V |
| 73  | 0V |
| 74  | 0V |
| 75  | 0V |
| 76  | 0V |
| 77  | 0V |
| 78  | 0V |
| 79  | 0V |
| 80  | 0V |
| 81  | 0V |
| 82  | 0V |
| 83  | 0V |
| 84  | 0V |
| 85  | 0V |
| 86  | 0V |
| 87  | 0V |
| 88  | 0V |
| 89  | 0V |
| 90  | 0V |
| 91  | 0V |
| 92  | 0V |
| 93  | 0V |
| 94  | 0V |
| 95  | 0V |
| 96  | 0V |
| 97  | 0V |
| 98  | 0V |
| 99  | 0V |
| 100 | 0V |

IC06

|     |    |
|-----|----|
| 1   | 0V |
| 2   | 0V |
| 3   | 0V |
| 4   | 0V |
| 5   | 0V |
| 6   | 0V |
| 7   | 0V |
| 8   | 0V |
| 9   | 0V |
| 10  | 0V |
| 11  | 0V |
| 12  | 0V |
| 13  | 0V |
| 14  | 0V |
| 15  | 0V |
| 16  | 0V |
| 17  | 0V |
| 18  | 0V |
| 19  | 0V |
| 20  | 0V |
| 21  | 0V |
| 22  | 0V |
| 23  | 0V |
| 24  | 0V |
| 25  | 0V |
| 26  | 0V |
| 27  | 0V |
| 28  | 0V |
| 29  | 0V |
| 30  | 0V |
| 31  | 0V |
| 32  | 0V |
| 33  | 0V |
| 34  | 0V |
| 35  | 0V |
| 36  | 0V |
| 37  | 0V |
| 38  | 0V |
| 39  | 0V |
| 40  | 0V |
| 41  | 0V |
| 42  | 0V |
| 43  | 0V |
| 44  | 0V |
| 45  | 0V |
| 46  | 0V |
| 47  | 0V |
| 48  | 0V |
| 49  | 0V |
| 50  | 0V |
| 51  | 0V |
| 52  | 0V |
| 53  | 0V |
| 54  | 0V |
| 55  | 0V |
| 56  | 0V |
| 57  | 0V |
| 58  | 0V |
| 59  | 0V |
| 60  | 0V |
| 61  | 0V |
| 62  | 0V |
| 63  | 0V |
| 64  | 0V |
| 65  | 0V |
| 66  | 0V |
| 67  | 0V |
| 68  | 0V |
| 69  | 0V |
| 70  | 0V |
| 71  | 0V |
| 72  | 0V |
| 73  | 0V |
| 74  | 0V |
| 75  | 0V |
| 76  | 0V |
| 77  | 0V |
| 78  | 0V |
| 79  | 0V |
| 80  | 0V |
| 81  | 0V |
| 82  | 0V |
| 83  | 0V |
| 84  | 0V |
| 85  | 0V |
| 86  | 0V |
| 87  | 0V |
| 88  | 0V |
| 89  | 0V |
| 90  | 0V |
| 91  | 0V |
| 92  | 0V |
| 93  | 0V |
| 94  | 0V |
| 95  | 0V |
| 96  | 0V |
| 97  | 0V |
| 98  | 0V |
| 99  | 0V |
| 100 | 0V |

IC04

|     |    |
|-----|----|
| 1   | 0V |
| 2   | 0V |
| 3   | 0V |
| 4   | 0V |
| 5   | 0V |
| 6   | 0V |
| 7   | 0V |
| 8   | 0V |
| 9   | 0V |
| 10  | 0V |
| 11  | 0V |
| 12  | 0V |
| 13  | 0V |
| 14  | 0V |
| 15  | 0V |
| 16  | 0V |
| 17  | 0V |
| 18  | 0V |
| 19  | 0V |
| 20  | 0V |
| 21  | 0V |
| 22  | 0V |
| 23  | 0V |
| 24  | 0V |
| 25  | 0V |
| 26  | 0V |
| 27  | 0V |
| 28  | 0V |
| 29  | 0V |
| 30  | 0V |
| 31  | 0V |
| 32  | 0V |
| 33  | 0V |
| 34  | 0V |
| 35  | 0V |
| 36  | 0V |
| 37  | 0V |
| 38  | 0V |
| 39  | 0V |
| 40  | 0V |
| 41  | 0V |
| 42  | 0V |
| 43  | 0V |
| 44  | 0V |
| 45  | 0V |
| 46  | 0V |
| 47  | 0V |
| 48  | 0V |
| 49  | 0V |
| 50  | 0V |
| 51  | 0V |
| 52  | 0V |
| 53  | 0V |
| 54  | 0V |
| 55  | 0V |
| 56  | 0V |
| 57  | 0V |
| 58  | 0V |
| 59  | 0V |
| 60  | 0V |
| 61  | 0V |
| 62  | 0V |
| 63  | 0V |
| 64  | 0V |
| 65  | 0V |
| 66  | 0V |
| 67  | 0V |
| 68  | 0V |
| 69  | 0V |
| 70  | 0V |
| 71  | 0V |
| 72  | 0V |
| 73  | 0V |
| 74  | 0V |
| 75  | 0V |
| 76  | 0V |
| 77  | 0V |
| 78  | 0V |
| 79  | 0V |
| 80  | 0V |
| 81  | 0V |
| 82  | 0V |
| 83  | 0V |
| 84  | 0V |
| 85  | 0V |
| 86  | 0V |
| 87  | 0V |
| 88  | 0V |
| 89  | 0V |
| 90  | 0V |
| 91  | 0V |
| 92  | 0V |
| 93  | 0V |
| 94  | 0V |
| 95  | 0V |
| 96  | 0V |
| 97  | 0V |
| 98  | 0V |
| 99  | 0V |
| 100 | 0V |

IC05

|     |    |
|-----|----|
| 1   | 0V |
| 2   | 0V |
| 3   | 0V |
| 4   | 0V |
| 5   | 0V |
| 6   | 0V |
| 7   | 0V |
| 8   | 0V |
| 9   | 0V |
| 10  | 0V |
| 11  | 0V |
| 12  | 0V |
| 13  | 0V |
| 14  | 0V |
| 15  | 0V |
| 16  | 0V |
| 17  | 0V |
| 18  | 0V |
| 19  | 0V |
| 20  | 0V |
| 21  | 0V |
| 22  | 0V |
| 23  | 0V |
| 24  | 0V |
| 25  | 0V |
| 26  | 0V |
| 27  | 0V |
| 28  | 0V |
| 29  | 0V |
| 30  | 0V |
| 31  | 0V |
| 32  | 0V |
| 33  | 0V |
| 34  | 0V |
| 35  | 0V |
| 36  | 0V |
| 37  | 0V |
| 38  | 0V |
| 39  | 0V |
| 40  | 0V |
| 41  | 0V |
| 42  | 0V |
| 43  | 0V |
| 44  | 0V |
| 45  | 0V |
| 46  | 0V |
| 47  | 0V |
| 48  | 0V |
| 49  | 0V |
| 50  | 0V |
| 51  | 0V |
| 52  | 0V |
| 53  | 0V |
| 54  | 0V |
| 55  | 0V |
| 56  | 0V |
| 57  | 0V |
| 58  | 0V |
| 59  | 0V |
| 60  | 0V |
| 61  | 0V |
| 62  | 0V |
| 63  | 0V |
| 64  | 0V |
| 65  | 0V |
| 66  | 0V |
| 67  | 0V |
| 68  | 0V |
| 69  | 0V |
| 70  | 0V |
| 71  | 0V |
| 72  | 0V |
| 73  | 0V |
| 74  | 0V |
| 75  | 0V |
| 76  | 0V |
| 77  | 0V |
| 78  | 0V |
| 79  | 0V |
| 80  | 0V |
| 81  | 0V |
| 82  | 0V |
| 83  | 0V |
| 84  | 0V |
| 85  | 0V |
| 86  | 0V |
| 87  | 0V |
| 88  | 0V |
| 89  | 0V |
| 90  | 0V |
| 91  | 0V |
| 92  | 0V |
| 93  | 0V |
| 94  | 0V |
| 95  | 0V |
| 96  | 0V |
| 97  | 0V |
| 98  | 0V |
| 99  | 0V |
| 100 | 0V |

IC07

|     |    |
|-----|----|
| 1   | 0V |
| 2   | 0V |
| 3   | 0V |
| 4   | 0V |
| 5   | 0V |
| 6   | 0V |
| 7   | 0V |
| 8   | 0V |
| 9   | 0V |
| 10  | 0V |
| 11  | 0V |
| 12  | 0V |
| 13  | 0V |
| 14  | 0V |
| 15  | 0V |
| 16  | 0V |
| 17  | 0V |
| 18  | 0V |
| 19  | 0V |
| 20  | 0V |
| 21  | 0V |
| 22  | 0V |
| 23  | 0V |
| 24  | 0V |
| 25  | 0V |
| 26  | 0V |
| 27  | 0V |
| 28  | 0V |
| 29  | 0V |
| 30  | 0V |
| 31  | 0V |
| 32  | 0V |
| 33  | 0V |
| 34  | 0V |
| 35  | 0V |
| 36  | 0V |
| 37  | 0V |
| 38  | 0V |
| 39  | 0V |
| 40  | 0V |
| 41  | 0V |
| 42  | 0V |
| 43  | 0V |
| 44  | 0V |
| 45  | 0V |
| 46  | 0V |
| 47  | 0V |
| 48  | 0V |
| 49  | 0V |
| 50  | 0V |
| 51  | 0V |
| 52  | 0V |
| 53  | 0V |
| 54  | 0V |
| 55  | 0V |
| 56  | 0V |
| 57  | 0V |
| 58  | 0V |
| 59  | 0V |
| 60  | 0V |
| 61  | 0V |
| 62  | 0V |
| 63  | 0V |
| 64  | 0V |
| 65  | 0V |
| 66  | 0V |
| 67  | 0V |
| 68  | 0V |
| 69  | 0V |
| 70  | 0V |
| 71  | 0V |
| 72  | 0V |
| 73  | 0V |
| 74  | 0V |
| 75  | 0V |
| 76  | 0V |
| 77  | 0V |
| 78  | 0V |
| 79  | 0V |
| 80  | 0V |
| 81  | 0V |
| 82  | 0V |
| 83  | 0V |
| 84  | 0V |
| 85  | 0V |
| 86  | 0V |
| 87  | 0V |
| 88  | 0V |
| 89  | 0V |
| 90  | 0V |
| 91  | 0V |
| 92  | 0V |
| 93  | 0V |
| 94  | 0V |
| 95  | 0V |
| 96  | 0V |
| 97  | 0V |
| 98  | 0V |
| 99  | 0V |
| 100 | 0V |

IC08

|     |    |
|-----|----|
| 1   | 0V |
| 2   | 0V |
| 3   | 0V |
| 4   | 0V |
| 5   | 0V |
| 6   | 0V |
| 7   | 0V |
| 8   | 0V |
| 9   | 0V |
| 10  | 0V |
| 11  | 0V |
| 12  | 0V |
| 13  | 0V |
| 14  | 0V |
| 15  | 0V |
| 16  | 0V |
| 17  | 0V |
| 18  | 0V |
| 19  | 0V |
| 20  | 0V |
| 21  | 0V |
| 22  | 0V |
| 23  | 0V |
| 24  | 0V |
| 25  | 0V |
| 26  | 0V |
| 27  | 0V |
| 28  | 0V |
| 29  | 0V |
| 30  | 0V |
| 31  | 0V |
| 32  | 0V |
| 33  | 0V |
| 34  | 0V |
| 35  | 0V |
| 36  | 0V |
| 37  | 0V |
| 38  | 0V |
| 39  | 0V |
| 40  | 0V |
| 41  | 0V |
| 42  | 0V |
| 43  | 0V |
| 44  | 0V |
| 45  | 0V |
| 46  | 0V |
| 47  | 0V |
| 48  | 0V |
| 49  | 0V |
| 50  | 0V |
| 51  | 0V |
| 52  | 0V |
| 53  | 0V |
| 54  | 0V |
| 55  | 0V |
| 56  | 0V |
| 57  | 0V |
| 58  | 0V |
| 59  | 0V |
| 60  | 0V |
| 61  | 0V |
| 62  | 0V |
| 63  | 0V |
| 64  | 0V |
| 65  | 0V |
| 66  | 0V |
| 67  | 0V |
| 68  | 0V |
| 69  | 0V |
| 70  | 0V |
| 71  | 0V |
| 72  | 0V |
| 73  | 0V |
| 74  | 0V |
| 75  | 0V |
| 76  | 0V |
| 77  | 0V |
| 78  | 0V |
| 79  | 0V |
| 80  | 0V |
| 81  | 0V |
| 82  | 0V |
| 83  | 0V |
| 84  | 0V |
| 85  | 0V |
| 86  | 0V |
| 87  | 0V |
| 88  | 0V |
| 89  | 0V |
| 90  | 0V |
| 91  | 0V |
| 92  | 0V |
| 93  | 0V |
| 94  | 0V |
| 95  | 0V |
| 96  | 0V |
| 97  | 0V |
| 98  | 0V |
| 99  | 0V |
| 100 | 0V |

IC09

|    |      |
|----|------|
| 1  | 0V   |
| 2  | 0V   |
| 3  | 0V   |
| 4  | 0V   |
| 5  | 0V   |
| 6  | 0V   |
| 7  | 0V   |
| 8  | 0V   |
| 9  | 0V   |
| 10 | 0V   |
| 11 | 0V   |
| 12 | 0V   |
| 13 | 0V   |
| 14 | 0V   |
| 15 | 0V   |
| 16 | 0V   |
| 17 | 0V   |
| 18 | 0V   |
| 19 | 0V   |
| 20 | 0V   |
| 21 | 0V   |
| 22 | 0V   |
| 23 | 0V   |
| 24 | 0V   |
| 25 | 0V   |
| 26 | 0V   |
| 27 | 0V   |
| 28 | 0V   |
| 29 | 0V   |
| 30 | 0V   |
| 31 | 0V   |
| 32 | 0V   |
| 33 | 0V   |
| 34 | 0V   |
| 35 | 0V   |
| 36 | 0V   |
| 37 | 0V   |
| 38 | 0V   |
| 39 | 0V   |
| 40 | 0V   |
| 41 | 0V   |
| 42 | 0V   |
| 43 | 0V   |
| 44 | 0V   |
| 45 | 0V   |
| 46 | 0V   |
| 47 | 0V   |
| 48 | 0V   |
| 49 | 0V   |
| 50 | 0V   |
| 51 | 0V   |
| 52 | 0V   |
| 53 | 0V   |
| 54 | 0V   |
| 55 | 0V   |
| 56 | 0V   |
| 57 | 0V   |
| 58 | 0V   |
| 59 | 0V   |
| 60 | 0V   |
| 61 | 0V   |
| 62 | 0V   |
| 63 | 0V   |
| 64 | 0V   |
| 65 | 0V   |
| 66 | 0V   |
| 67 | 0V   |
| 68 | 0V   |
| 69 | 0V   |
| 70 | 0V   |
| 71 | 0V   |
| 72 | 0V   |
| 73 | 0V   |
| 74 | 0V   |
| 75 | 0V   |
| 76 | 0V   |
| 77 | 0V   |
| 78 | 0V   |
| 79 | 0V   |
| 80 | 0V   |
| 81 | 0V   |
| 82 | 0V   |
| 83 | 0V   |
| 84 | 0V   |
| 85 | 0V</ |

|    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |        |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |
|----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|
| SV | Q769 | Q770 | Q771 | Q772 | Q773 | Q774 | Q775 | Q776 | Q777 | Q778 | Q779 | Q780 | Q781 | Q782 | Q783 | Q784 | Q785 | Q786 | Q787 | Q788 | Q789 | Q790 | Q791 | Q792 | Q793 | Q794 | Q795 | Q796 | Q797 | Q798 | Q799 | Q800 | Q801 | Q802 | Q803 | Q804 | Q805 | Q806 | Q807 | Q808 | Q809 | Q810 | Q811 | Q812 | Q813 | Q814 | Q815 | Q816 | Q817 | Q818 | Q819 | Q820 | Q821 | Q822 | Q823 | Q824 | Q825 | Q826 | Q827 | Q828 | Q829 | Q830 | Q831 | Q832 | Q833 | Q834 | Q835 | Q836 | Q837 | Q838 | Q839 | Q840 | Q841 | Q842 | Q843 | Q844 | Q845 | Q846 | Q847 | Q848 | Q849 | Q850 | Q851 | Q852 | Q853 | Q854 | Q855 | Q856 | Q857 | Q858 | Q859 | Q860 | Q861 | Q862 | Q863 | Q864 | Q865 | Q866 | Q867 | Q868 | Q869 | Q870 | Q871 | Q872 | Q873 | Q874 | Q875 | Q876 | Q877 | Q878 | Q879 | Q880 | Q881 | Q882 | Q883 | Q884 | Q885 | Q886 | Q887 | Q888 | Q889 | Q890 | Q891 | Q892 | Q893 | Q894 | Q895 | Q896 | Q897 | Q898 | Q899 | Q900 | Q901 | Q902 | Q903 | Q904 | Q905 | Q906 | Q907 | Q908 | Q909 | Q910 | Q911 | Q912 | Q913 | Q914 | Q915 | Q916 | Q917 | Q918 | Q919 | Q920 | Q921 | Q922 | Q923 | Q924 | Q925 | Q926 | Q927 | Q928 | Q929 | Q930 | Q931 | Q932 | Q933 | Q934 | Q935 | Q936 | Q937 | Q938 | Q939 | Q940 | Q941 | Q942 | Q943 | Q944 | Q945 | Q946 | Q947 | Q948 | Q949 | Q950 | Q951 | Q952 | Q953 | Q954 | Q955 | Q956 | Q957 | Q958 | Q959 | Q960 | Q961 | Q962 | Q963 | Q964 | Q965 | Q966 | Q967 | Q968 | Q969 | Q970 | Q971 | Q972 | Q973 | Q974 | Q975 | Q976 | Q977   | Q978 | Q979 | Q980 | Q981 | Q982 | Q983 | Q984 | Q985 | Q986 | Q987 | Q988 | Q989 | Q990 | Q991 | Q992 | Q993 | Q994 | Q995 | Q996 | Q997 | Q998 | Q999 | Q1000 |
| SV | Q769 | Q770 | Q771 | Q772 | Q773 | Q774 | Q775 | Q776 | Q777 | Q778 | Q779 | Q780 | Q781 | Q782 | Q783 | Q784 | Q785 | Q786 | Q787 | Q788 | Q789 | Q790 | Q791 | Q792 | Q793 | Q794 | Q795 | Q796 | Q797 | Q798 | Q799 | Q800 | Q801 | Q802 | Q803 | Q804 | Q805 | Q806 | Q807 | Q808 | Q809 | Q810 | Q811 | Q812 | Q813 | Q814 | Q815 | Q816 | Q817 | Q818 | Q819 | Q820 | Q821 | Q822 | Q823 | Q824 | Q825 | Q826 | Q827 | Q828 | Q829 | Q830 | Q831 | Q832 | Q833 | Q834 | Q835 | Q836 | Q837 | Q838 | Q839 | Q840 | Q841 | Q842 | Q843 | Q844 | Q845 | Q846 | Q847 | Q848 | Q849 | Q850 | Q851 | Q852 | Q853 | Q854 | Q855 | Q856 | Q857 | Q858 | Q859 | Q860 | Q861 | Q862 | Q863 | Q864 | Q865 | Q866 | Q867 | Q868 | Q869 | Q870 | Q871 | Q872 | Q873 | Q874 | Q875 | Q876 | Q877 | Q878 | Q879 | Q880 | Q881 | Q882 | Q883 | Q884 | Q885 | Q886 | Q887 | Q888 | Q889 | Q890 | Q891 | Q892 | Q893 | Q894 | Q895 | Q896 | Q897 | Q898 | Q899 | Q900 | Q901 | Q902 | Q903 | Q904 | Q905 | Q906 | Q907 | Q908 | Q909 | Q910 | Q911 | Q912 | Q913 | Q914 | Q915 | Q916 | Q917 | Q918 | Q919 | Q920 | Q921 | Q922 | Q923 | Q924 | Q925 | Q926 | Q927 | Q928 | Q929 | Q930 | Q931 | Q932 | Q933 | Q934 | Q935 | Q936 | Q937 | Q938 | Q939 | Q940 | Q941 | Q942 | Q943 | Q944 | Q945 | Q946 | Q947 | Q948 | Q949 | Q950 | Q951 | Q952 | Q953 | Q954 | Q955 | Q956 | Q957 | Q958 | Q959 | Q960 | Q961 | Q962 | Q963 | Q964 | Q965 | Q966 | Q967 | Q968 | Q969 | Q970 | Q971 | Q972 | Q973 | Q974 | Q975 | Q976 | Q977   | Q978 | Q979 | Q980 | Q981 | Q982 | Q983 | Q984 | Q985 | Q986 | Q987 | Q988 | Q989 | Q990 | Q991 | Q992 | Q993 | Q994 | Q995 | Q996 | Q997 | Q998 | Q999 | Q1000 |
| SV | Q769 | Q770 | Q771 | Q772 | Q773 | Q774 | Q775 | Q776 | Q777 | Q778 | Q779 | Q780 | Q781 | Q782 | Q783 | Q784 | Q785 | Q786 | Q787 | Q788 | Q789 | Q790 | Q791 | Q792 | Q793 | Q794 | Q795 | Q796 | Q797 | Q798 | Q799 | Q800 | Q801 | Q802 | Q803 | Q804 | Q805 | Q806 | Q807 | Q808 | Q809 | Q810 | Q811 | Q812 | Q813 | Q814 | Q815 | Q816 | Q817 | Q818 | Q819 | Q820 | Q821 | Q822 | Q823 | Q824 | Q825 | Q826 | Q827 | Q828 | Q829 | Q830 | Q831 | Q832 | Q833 | Q834 | Q835 | Q836 | Q837 | Q838 | Q839 | Q840 | Q841 | Q842 | Q843 | Q844 | Q845 | Q846 | Q847 | Q848 | Q849 | Q850 | Q851 | Q852 | Q853 | Q854 | Q855 | Q856 | Q857 | Q858 | Q859 | Q860 | Q861 | Q862 | Q863 | Q864 | Q865 | Q866 | Q867 | Q868 | Q869 | Q870 | Q871 | Q872 | Q873 | Q874 | Q875 | Q876 | Q877 | Q878 | Q879 | Q880 | Q881 | Q882 | Q883 | Q884 | Q885 | Q886 | Q887 | Q888 | Q889 | Q890 | Q891 | Q892 | Q893 | Q894 | Q895 | Q896 | Q897 | Q898 | Q899 | Q900 | Q901 | Q902 | Q903 | Q904 | Q905 | Q906 | Q907 | Q908 | Q909 | Q910 | Q911 | Q912 | Q913 | Q914 | Q915 | Q916 | Q917 | Q918 | Q919 | Q920 | Q921 | Q922 | Q923 | Q924 | Q925 | Q926 | Q927 | Q928 | Q929 | Q930 | Q931 | Q932 | Q933 | Q934 | Q935 | Q936 | Q937 | Q938 | Q939 | Q940 | Q941 | Q942 | Q943 | Q944 | Q945 | Q946 | Q947 | Q948 | Q949 | Q950 | Q951 | Q952 | Q953 | Q954 | Q955 | Q956 | Q957 | Q958 | Q959 | Q960 | Q961 | Q962 | Q963 | Q964 | Q965 | Q966 | Q967 | Q968 | Q969 | Q970 | Q971 | Q972 | Q973 | Q974 | Q975 | Q976 | Q977   | Q978 | Q979 | Q980 | Q981 | Q982 | Q983 | Q984 | Q985 | Q986 | Q987 | Q988 | Q989 | Q990 | Q991 | Q992 | Q993 | Q994 | Q995 | Q996 | Q997 | Q998 | Q999 | Q1000 |
| SV | Q769 | Q770 | Q771 | Q772 | Q773 | Q774 | Q775 | Q776 | Q777 | Q778 | Q779 | Q780 | Q781 | Q782 | Q783 | Q784 | Q785 | Q786 | Q787 | Q788 | Q789 | Q790 | Q791 | Q792 | Q793 | Q794 | Q795 | Q796 | Q797 | Q798 | Q799 | Q800 | Q801 | Q802 | Q803 | Q804 | Q805 | Q806 | Q807 | Q808 | Q809 | Q810 | Q811 | Q812 | Q813 | Q814 | Q815 | Q816 | Q817 | Q818 | Q819 | Q820 | Q821 | Q822 | Q823 | Q824 | Q825 | Q826 | Q827 | Q828 | Q829 | Q830 | Q831 | Q832 | Q833 | Q834 | Q835 | Q836 | Q837 | Q838 | Q839 | Q840 | Q841 | Q842 | Q843 | Q844 | Q845 | Q846 | Q847 | Q848 | Q849 | Q850 | Q851 | Q852 | Q853 | Q854 | Q855 | Q856 | Q857 | Q858 | Q859 | Q860 | Q861 | Q862 | Q863 | Q864 | Q865 | Q866 | Q867 | Q868 | Q869 | Q870 | Q871 | Q872 | Q873 | Q874 | Q875 | Q876 | Q877 | Q878 | Q879 | Q880 | Q881 | Q882 | Q883 | Q884 | Q885 | Q886 | Q887 | Q888 | Q889 | Q890 | Q891 | Q892 | Q893 | Q894 | Q895 | Q896 | Q897 | Q898 | Q899 | Q900 | Q901 | Q902 | Q903 | Q904 | Q905 | Q906 | Q907 | Q908 | Q909 | Q910 | Q911 | Q912 | Q913 | Q914 | Q915 | Q916 | Q917 | Q918 | Q919 | Q920 | Q921 | Q922 | Q923 | Q924 | Q925 | Q926 | Q927 | Q928 | Q929 | Q930 | Q931 | Q932 | Q933 | Q934 | Q935 | Q936 | Q937 | Q938 | Q939 | Q940 | Q941 | Q942 | Q943 | Q944 | Q945 | Q946 | Q947 | Q948 | Q949 | Q950 | Q951 | Q952 | Q953 | Q954 | Q955 | Q956 | Q957 | Q958 | Q959 | Q960 | Q961 | Q962 | Q963 | Q964 | Q965 | Q966 | Q967 | Q968 | Q969 | Q970 | Q971 | Q972 | Q973 | Q974 | Q975 | Q976 | Q977   | Q978 | Q979 | Q980 | Q981 | Q982 | Q983 | Q984 | Q985 | Q986 | Q987 | Q988 | Q989 | Q990 | Q991 | Q992 | Q993 | Q994 | Q995 | Q996 | Q997 | Q998 | Q999 | Q1000 |
| SV | Q769 | Q770 | Q771 | Q772 | Q773 | Q774 | Q775 | Q776 | Q777 | Q778 | Q779 | Q780 | Q781 | Q782 | Q783 | Q784 | Q785 | Q786 | Q787 | Q788 | Q789 | Q790 | Q791 | Q792 | Q793 | Q794 | Q795 | Q796 | Q797 | Q798 | Q799 | Q800 | Q801 | Q802 | Q803 | Q804 | Q805 | Q806 | Q807 | Q808 | Q809 | Q810 | Q811 | Q812 | Q813 | Q814 | Q815 | Q816 | Q817 | Q818 | Q819 | Q820 | Q821 | Q822 | Q823 | Q824 | Q825 | Q826 | Q827 | Q828 | Q829 | Q830 | Q831 | Q832 | Q833 | Q834 | Q835 | Q836 | Q837 | Q838 | Q839 | Q840 | Q841 | Q842 | Q843 | Q844 | Q845 | Q846 | Q847 | Q848 | Q849 | Q850 | Q851 | Q852 | Q853 | Q854 | Q855 | Q856 | Q857 | Q858 | Q859 | Q860 | Q861 | Q862 | Q863 | Q864 | Q865 | Q866 | Q867 | Q868 | Q869 | Q870 | Q871 | Q872 | Q873 | Q874 | Q875 | Q876 | Q877 | Q878 | Q879 | Q880 | Q881 | Q882 | Q883 | Q884 | Q885 | Q886 | Q887 | Q888 | Q889 | Q890 | Q891 | Q892 | Q893 | Q894 | Q895 | Q896 | Q897 | Q898 | Q899 | Q900 | Q901 | Q902 | Q903 | Q904 | Q905 | Q906 | Q907 | Q908 | Q909 | Q910 | Q911 | Q912 | Q913 | Q914 | Q915 | Q916 | Q917 | Q918 | Q919 | Q920 | Q921 | Q922 | Q923 | Q924 | Q925 | Q926 | Q927 | Q928 | Q929 | Q930 | Q931 | Q932 | Q933 | Q934 | Q935 | Q936 | Q937 | Q938 | Q939 | Q940 | Q941 | Q942 | Q943 | Q944 | Q945 | Q946 | Q947 | Q948 | Q949 | Q950 | Q951 | Q952 | Q953 | Q954 | Q955 | Q956 | Q957 | Q958 | Q959 | Q960 | Q961 | Q962 | Q963 | Q964 | Q965 | Q966 | Q967 | Q968 | Q969 | Q970 | Q971 | Q972 | Q973 | Q974 | Q975 | Q976 | Q977   | Q978 | Q979 | Q980 | Q981 | Q982 | Q983 | Q984 | Q985 | Q986 | Q987 | Q988 | Q989 | Q990 | Q991 | Q992 | Q993 | Q994 | Q995 | Q996 | Q997 | Q998 | Q999 | Q1000 |
| SV | Q769 | Q770 | Q771 | Q772 | Q773 | Q774 | Q775 | Q776 | Q777 | Q778 | Q779 | Q780 | Q781 | Q782 | Q783 | Q784 | Q785 | Q786 | Q787 | Q788 | Q789 | Q790 | Q791 | Q792 | Q793 | Q794 | Q795 | Q796 | Q797 | Q798 | Q799 | Q800 | Q801 | Q802 | Q803 | Q804 | Q805 | Q806 | Q807 | Q808 | Q809 | Q810 | Q811 | Q812 | Q813 | Q814 | Q815 | Q816 | Q817 | Q818 | Q819 | Q820 | Q821 | Q822 | Q823 | Q824 | Q825 | Q826 | Q827 | Q828 | Q829 | Q830 | Q831 | Q832 | Q833 | Q834 | Q835 | Q836 | Q837 | Q838 | Q839 | Q840 | Q841 | Q842 | Q843 | Q844 | Q845 | Q846 | Q847 | Q848 | Q849 | Q850 | Q851 | Q852 | Q853 | Q854 | Q855 | Q856 | Q857 | Q858 | Q859 | Q860 | Q861 | Q862 | Q863 | Q864 | Q865 | Q866 | Q867 | Q868 | Q869 | Q870 | Q871 | Q872 | Q873 | Q874 | Q875 | Q876 | Q877 | Q878 | Q879 | Q880 | Q881 | Q882 | Q883 | Q884 | Q885 | Q886 | Q887 | Q888 | Q889 | Q890 | Q891 | Q892 | Q893 | Q894 | Q895 | Q896 | Q897 | Q898 | Q899 | Q900 | Q901 | Q902 | Q903 | Q904 | Q905 | Q906 | Q907 | Q908 | Q909 | Q910 | Q911 | Q912 | Q913 | Q914 | Q915 | Q916 | Q917 | Q918 | Q919 | Q920 | Q921 | Q922 | Q923 | Q924 | Q925 | Q926 | Q927 | Q928 | Q929 | Q930 | Q931 | Q932 | Q933 | Q934 | Q935 | Q936 | Q937 | Q938 | Q939 | Q940 | Q941 | Q942 | Q943 | Q944 | Q945 | Q946 | Q947 | Q948 | Q949 | Q950 | Q951 | Q952 | Q953 | Q954 | Q955 | Q956 | Q957 | Q958 | Q959 | Q960 | Q961 | Q962 | Q963 | Q964 | Q965 | Q966 | Q967 | Q968 | Q969 | Q970 | Q971 | Q972 | Q973 | Q974 | Q975 | Q976 | Q977</ |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |

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|-----|----|-------------------|-----------|----|---|----------|-------|----|---|
| 7V  | 1  | ATT START         | Low Pulse | 4  | 1 | 0.574 ON | 0.64V | 7  | 1 |
| 8V  | 2  | ATT REW           | Low Pulse | 5  | 1 | 0.574 ON | 0.64V | 8  | 1 |
| 9V  | 3  | OV                |           | 6  | 1 | 0.574 ON | 0.64V | 9  | 1 |
| 10V | 4  | OV                |           | 7  | 1 | 0.574 ON | 0.64V | 10 | 1 |
| 11V | 5  | SSO ON After Slew | 5V        | 8  | 2 | 2.4V     |       | 11 | 2 |
| 12V | 6  | SSO ON After Slew | 5V        | 9  | 2 | 2.4V     |       | 12 | 2 |
| 13V | 7  | SSO ON After Slew | 5V        | 10 | 2 | 2.4V     |       | 13 | 2 |
| 14V | 8  | ATT REW           | Low Pulse | 11 | 3 | 1.8V     |       | 14 | 3 |
| 15V | 9  | SSO REW           | Low Pulse | 12 | 3 | 1.8V     |       | 15 | 3 |
| 16V | 10 | FF CL             |           | 13 | 3 | 1.8V     |       | 16 | 3 |
| 17V | 11 | PAUSE, REC/PULSE  |           | 14 | 3 | 1.8V     |       | 17 | 3 |
| 18V | 12 | PAUSE, REC/PULSE  |           | 15 | 3 | 1.8V     |       | 18 | 3 |

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Others

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|  |   |      |   |            |      |                        |      |
|--|---|------|---|------------|------|------------------------|------|
|  | 7 | OV   | E | SIGNAL ON  | S802 | Monitor switch         | Tape |
|  | 6 | OV   | D | INDEX SCAN | S803 | Noise reduction switch | addr |
|  | 5 | 0.9V | R | REVIEW     | S701 | Mute switch            | OFF  |
|  | 4 | OV   |   |            | S702 | Pause switch           | OFF  |
|  | 3 | OV   |   |            | S703 | REC switch             | OFF  |
|  | 2 | OV   |   |            | S704 | FF switch              | OFF  |
|  | 1 | OV   |   |            | S705 | Play switch            | OFF  |
|  |   |      |   |            | S706 | Stop switch            | OFF  |
|  |   |      |   |            | S707 | REW switch             | OFF  |
|  |   |      |   |            | S708 | Start switch           | OFF  |
|  |   |      |   |            | S709 | Fix auto switch        | OFF  |
|  |   |      |   |            | S710 | Index search switch    | OFF  |
|  |   |      |   |            | S711 | Counter reset switch   | OFF  |
|  |   |      |   |            | S712 | Memory switch          | OFF  |
|  |   |      |   |            |      | Times switch           | Play |

[illegible]

|      |       |      |        |      |   |    |    |   |      |   |   |
|------|-------|------|--------|------|---|----|----|---|------|---|---|
| Q774 |       |      | Others | 6    | 3 | 20 | 1  | 5 | 4.0V | 2 | 1 |
| C    | INDEX | SCAN | 4V     | OV   | 6 | 3  | 20 | 1 | OV   | 2 | 1 |
| C    | 12V   | 12V  | 4.0V   | OV   | 6 | 3  | 20 | 1 | OV   | 2 | 1 |
| C    | 12V   | 12V  | OV     | OV   | 6 | 3  | 20 | 1 | OV   | 2 | 1 |
| Q903 |       |      | Q904   | Q905 | 6 | 3  | 20 | 1 | OV   | 2 | 1 |
| C    | 12V   | 12V  | C      | 15V  | 6 | 3  | 20 | 1 | OV   | 2 | 1 |
| C    | 12V   | 12V  | C      | 15V  | 6 | 3  | 20 | 1 | OV   | 2 | 1 |
| C    | 12V   | 12V  | C      | 15V  | 6 | 3  | 20 | 1 | OV   | 2 | 1 |
| Q906 |       |      | Q907   | Q908 | 6 | 3  | 20 | 1 | OV   | 2 | 1 |
| C    | 12V   | 12V  | C      | 12V  | 6 | 3  | 20 | 1 | OV   | 2 | 1 |
| C    | 12V   | 12V  | C      | 12V  | 6 | 3  | 20 | 1 | OV   | 2 | 1 |
| C    | 12V   | 12V  | C      | 12V  | 6 | 3  | 20 | 1 | OV   | 2 | 1 |
| Q909 |       |      | Q910   | Q911 | 6 | 3  | 20 | 1 | OV   | 2 | 1 |
| C    | 12V   | 12V  | C      | 12V  | 6 | 3  | 20 | 1 | OV   | 2 | 1 |
| C    | 12V   | 12V  | C      | 12V  | 6 | 3  | 20 | 1 | OV   | 2 | 1 |
| C    | 12V   | 12V  | C      | 12V  | 6 | 3  | 20 | 1 | OV   | 2 | 1 |
| Q912 |       |      | Q913   | Q914 | 6 | 3  | 20 | 1 | OV   | 2 | 1 |
| C    | 12V   | 12V  | C      | 12V  | 6 | 3  | 20 | 1 | OV   | 2 | 1 |
| C    | 12V   | 12V  | C      | 12V  | 6 | 3  | 20 | 1 | OV   | 2 | 1 |
| C    | 12V   | 12V  | C      | 12V  | 6 | 3  | 20 | 1 | OV   | 2 | 1 |
| Q915 |       |      | Q916   | Q917 | 6 | 3  | 20 | 1 | OV   | 2 | 1 |
| C    | 12V   | 12V  | C      | 12V  | 6 | 3  | 20 | 1 | OV   | 2 | 1 |
| C    | 12V   | 12V  | C      | 12V  | 6 | 3  | 20 | 1 | OV   | 2 | 1 |
| C    | 12V   | 12V  | C      | 12V  | 6 | 3  | 20 | 1 | OV   | 2 | 1 |
| Q918 |       |      | Q919   | Q920 | 6 | 3  | 20 | 1 | OV   | 2 | 1 |
| C    | 12V   | 12V  | C      | 12V  | 6 | 3  | 20 | 1 | OV   | 2 | 1 |
| C    | 12V   | 12V  | C      | 12V  | 6 | 3  | 20 | 1 | OV   | 2 | 1 |
| C    | 12V   | 12V  | C      | 12V  | 6 | 3  | 20 | 1 | OV   | 2 | 1 |

|      |    |      |      |                                |     |
|------|----|------|------|--------------------------------|-----|
| 7.6V | C  | 7.6V | W716 | Memory 1 switch                | OFF |
| 7.6V | D  | 7.6V | W716 | Memory 2 switch                | OFF |
| 7.6V | E  | 7.6V | W716 | Tape position detection switch | —   |
| 7.6V | F  | 7.6V | W716 |                                |     |
| 7.6V | G  | 7.6V | W716 |                                |     |
| 7.6V | H  | 7.6V | W716 |                                |     |
| 7.6V | I  | 7.6V | W716 |                                |     |
| 7.6V | J  | 7.6V | W716 |                                |     |
| 7.6V | K  | 7.6V | W716 |                                |     |
| 7.6V | L  | 7.6V | W716 |                                |     |
| 7.6V | M  | 7.6V | W716 |                                |     |
| 7.6V | N  | 7.6V | W716 |                                |     |
| 7.6V | O  | 7.6V | W716 |                                |     |
| 7.6V | P  | 7.6V | W716 |                                |     |
| 7.6V | Q  | 7.6V | W716 |                                |     |
| 7.6V | R  | 7.6V | W716 |                                |     |
| 7.6V | S  | 7.6V | W716 |                                |     |
| 7.6V | T  | 7.6V | W716 |                                |     |
| 7.6V | U  | 7.6V | W716 |                                |     |
| 7.6V | V  | 7.6V | W716 |                                |     |
| 7.6V | W  | 7.6V | W716 |                                |     |
| 7.6V | X  | 7.6V | W716 |                                |     |
| 7.6V | Y  | 7.6V | W716 |                                |     |
| 7.6V | Z  | 7.6V | W716 |                                |     |
| 7.6V | AA | 7.6V | W716 |                                |     |
| 7.6V | AB | 7.6V | W716 |                                |     |
| 7.6V | AC | 7.6V | W716 |                                |     |
| 7.6V | AD | 7.6V | W716 |                                |     |
| 7.6V | AE | 7.6V | W716 |                                |     |
| 7.6V | AF | 7.6V | W716 |                                |     |
| 7.6V | AG | 7.6V | W716 |                                |     |
| 7.6V | AH | 7.6V | W716 |                                |     |
| 7.6V | AI | 7.6V | W716 |                                |     |
| 7.6V | AJ | 7.6V | W716 |                                |     |
| 7.6V | AK | 7.6V | W716 |                                |     |
| 7.6V | AL | 7.6V | W716 |                                |     |
| 7.6V | AM | 7.6V | W716 |                                |     |
| 7.6V | AN | 7.6V | W716 |                                |     |
| 7.6V | AO | 7.6V | W716 |                                |     |
| 7.6V | AP | 7.6V | W716 |                                |     |
| 7.6V | AQ | 7.6V | W716 |                                |     |
| 7.6V | AR | 7.6V | W716 |                                |     |
| 7.6V | AS | 7.6V | W716 |                                |     |
| 7.6V | AT | 7.6V | W716 |                                |     |
| 7.6V | AU | 7.6V | W716 |                                |     |
| 7.6V | AV | 7.6V | W716 |                                |     |
| 7.6V | AW | 7.6V | W716 |                                |     |
| 7.6V | AX | 7.6V | W716 |                                |     |
| 7.6V | AY | 7.6V | W716 |                                |     |
| 7.6V | AZ | 7.6V | W716 |                                |     |
| 7.6V | BA | 7.6V | W716 |                                |     |
| 7.6V | BB | 7.6V | W716 |                                |     |
| 7.6V | BC | 7.6V | W716 |                                |     |
| 7.6V | BD | 7.6V | W716 |                                |     |
| 7.6V | BE | 7.6V | W716 |                                |     |
| 7.6V | BF | 7.6V | W716 |                                |     |
| 7.6V | BG | 7.6V | W716 |                                |     |
| 7.6V | BH | 7.6V | W716 |                                |     |
| 7.6V | BI | 7.6V | W716 |                                |     |
| 7.6V | BJ | 7.6V | W716 |                                |     |
| 7.6V | BK | 7.6V | W716 |                                |     |
| 7.6V | BL | 7.6V | W716 |                                |     |
| 7.6V | BM | 7.6V | W716 |                                |     |
| 7.6V | BN | 7.6V | W716 |                                |     |
| 7.6V | BO | 7.6V | W716 |                                |     |
| 7.6V | BP | 7.6V | W716 |                                |     |
| 7.6V | BQ | 7.6V | W716 |                                |     |
| 7.6V | BR | 7.6V | W716 |                                |     |
| 7.6V | BS | 7.6V | W716 |                                |     |
| 7.6V | BT | 7.6V | W716 |                                |     |
| 7.6V | BU | 7.6V | W716 |                                |     |
| 7.6V | BV | 7.6V | W716 |                                |     |
| 7.6V | BW | 7.6V | W716 |                                |     |
| 7.6V | BX | 7.6V | W716 |                                |     |
| 7.6V | BY | 7.6V | W716 |                                |     |
| 7.6V | BZ | 7.6V | W716 |                                |     |

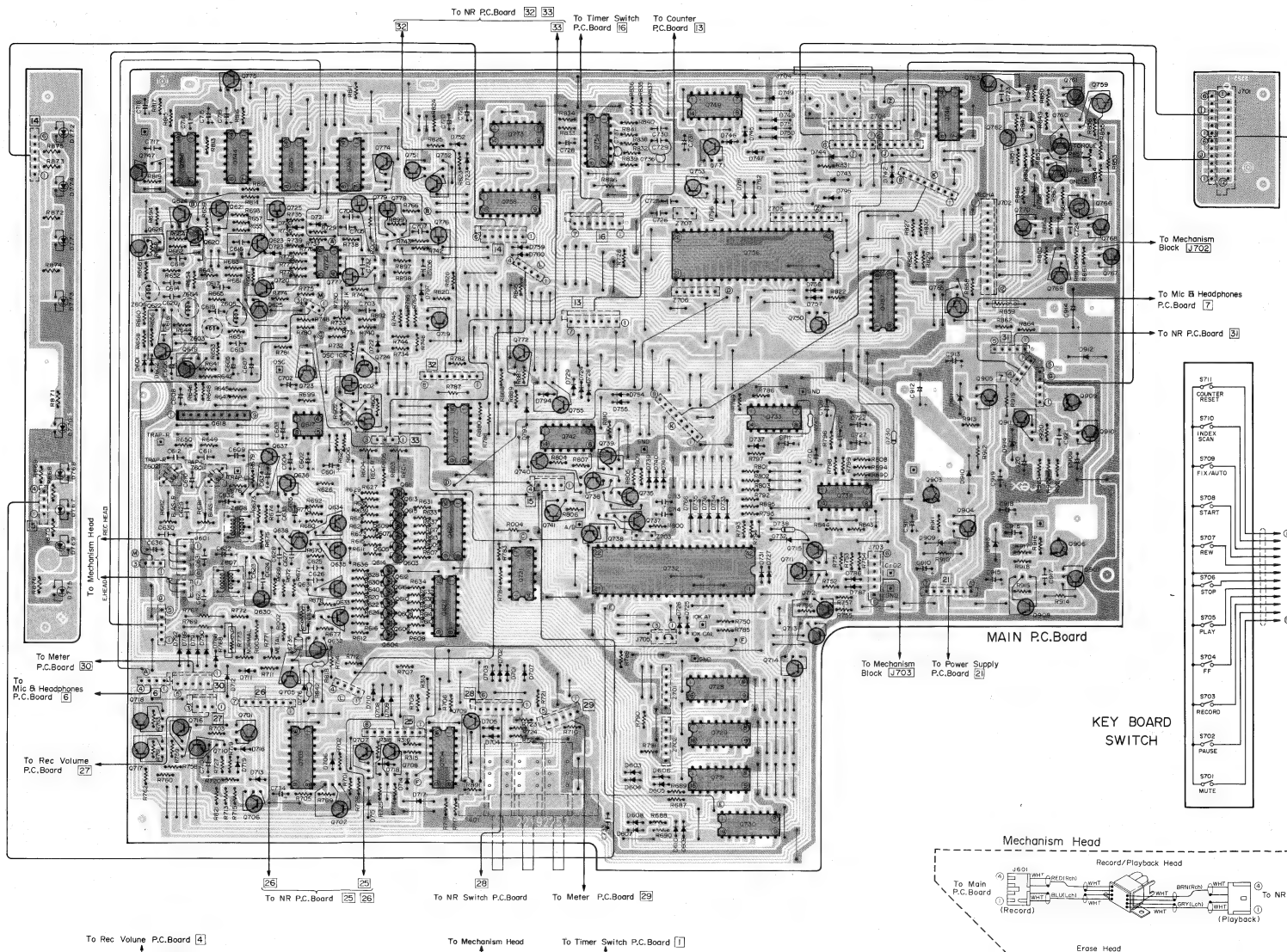
|   |                          |        |   |                              |      |      |                         |   |
|---|--------------------------|--------|---|------------------------------|------|------|-------------------------|---|
| P | PLAY, REC/PLAY, REC/MUTE | Others | E | PLAY, REC/PLAY, REC/MUTE     | 3.0V | 7.5V | REC/PLAY→STOP Low Pulse |   |
| E | 3.0V                     | 7.5V   | C | PLAY, REC/PLAY, FF, CUE, ATT | OV   | 7V   | C                       | PLAY, REC/PLAY On or REW FF→STOP Low Pulse 7. |
| C | 8.1V                     | 12.5V  | B | PLAY, REC/PLAY, REC/MUTE     | 3.7V | 7V   | B                       | PLAY, REC/PLAY →STOP Low Pulse 7.             |
| B | 5V                       | 8.1V   |   |                              |      |      |                         |   |

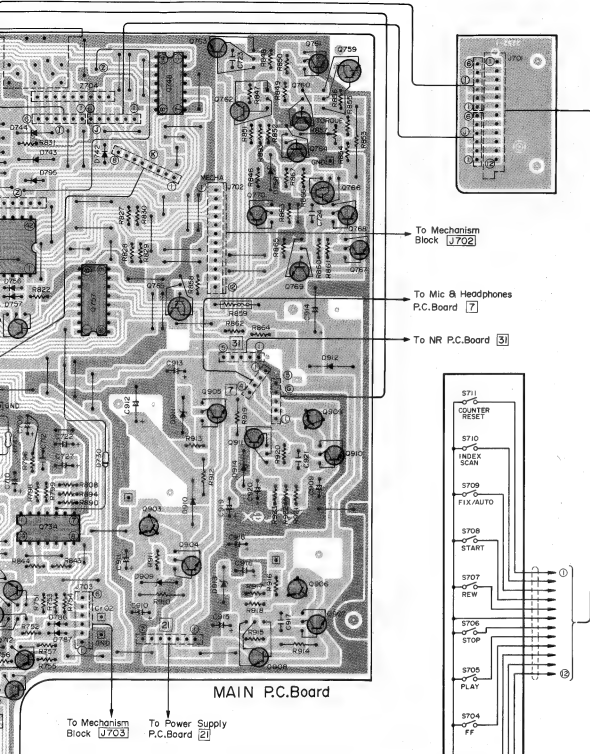
|   |      |   |        |   |        |   |      |   |        |  |   |      |  |    |
|---|------|---|--------|---|--------|---|------|---|--------|--|---|------|--|----|
| C | -14V | C | -14V   | C | +13.6V | C | 0V   | C | -29V   |  | 7 | 8V   |  | 0V |
| B | -13V | B | -13.6V | B | -6.2V  | E | 8.3V | E | -24.6V |  | 8 | 14V  |  | 0V |
|   |      |   |        |   |        |   |      |   |        |  | 9 | 7.6V |  | 9  |

|      |    |
|------|----|
| 5V   | 0V |
| 4.8V | 0V |
| 7.6V |    |

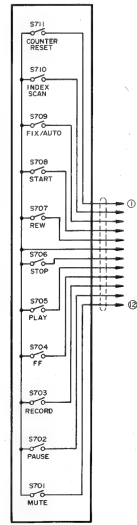
|   |      |      |
|---|------|------|
| 7 | 64V  | 2.2V |
| 8 | 1.2V | 0V   |
| 9 |      | 12V  |

# PC-G90AD

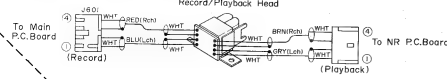




KEY BOARD SWITCH



Mechanism Head



MAIN P.C. Board

0605, 604

0605-612, 0615, 616

0605-612, 0615, 616

0605-612, 0615, 616

0617

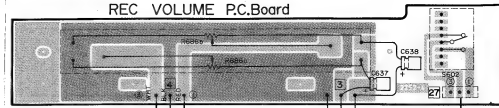
0618

0617

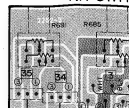
0618

0617

REC VOLUME P.C. Board

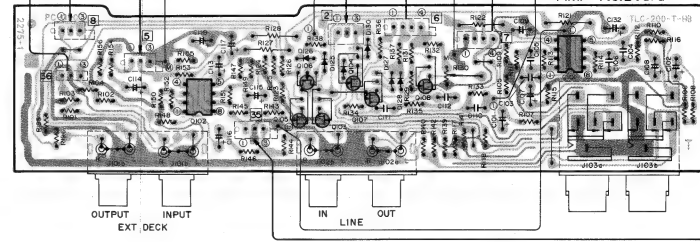


NR SWIT

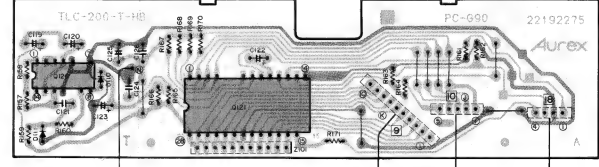


To NR P.C. Board

[36]

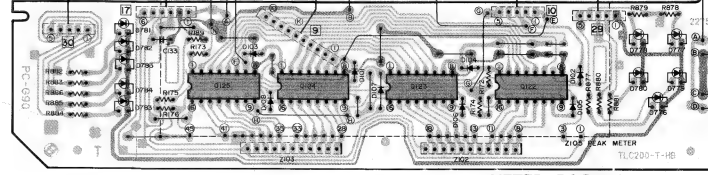


METER DRIVER P.C. Board



To Main P.C. Board

[30]



METER P.C. Board

Q722

Q734

Q722

Q734

Q722

Q734

Q748

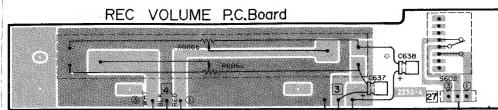
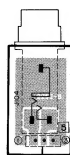
Q748

Q748

Q748

Q748

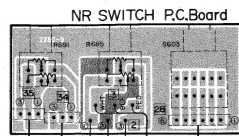
Q748



REC VOLUME P.C.Board

To NR P.C.Board [4]

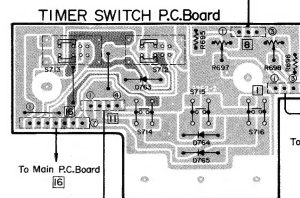
To Main P.C.Board [27]



NR SWITCH P.C.Board

To NR P.C.Board [34]

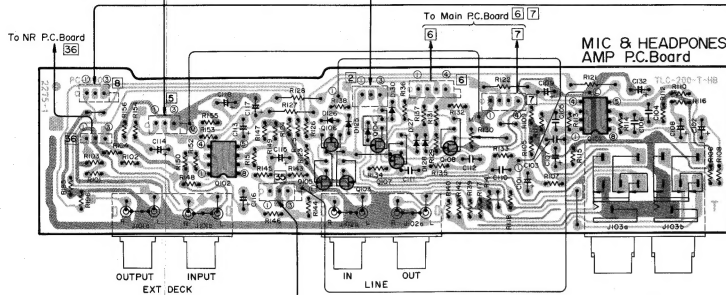
To Main P.C.Board [28]



TIMER SWITCH P.C.Board

To Main P.C.Board [6]

To NR P.C.Board [1]



MIC & HEADPHONES AMP P.C.Board

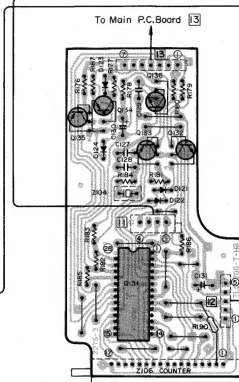
OUTPUT  
EXT DECK

INPUT

IN

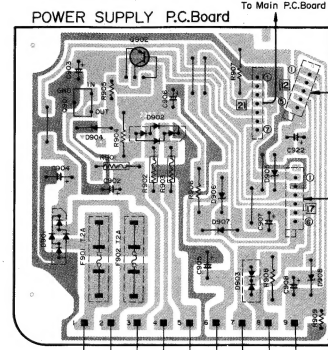
LINE

OUT



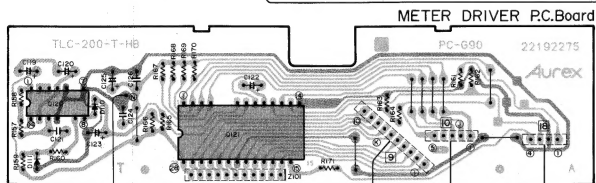
To Main P.C.Board [3]

COUNTER P.C.Board



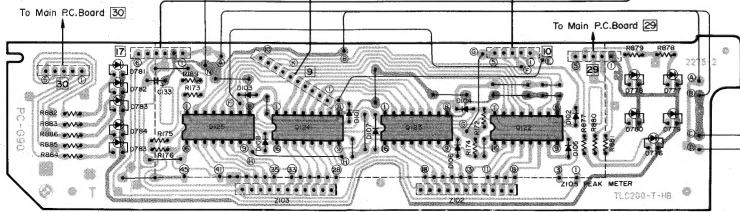
POWER SUPPLY P.C.Board

To Main P.C.Board [2]



METER DRIVER P.C.Board

To NR P.C.Board [8]

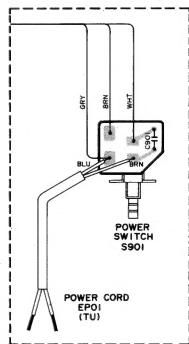


METER P.C.Board

To Main P.C.Board [29]

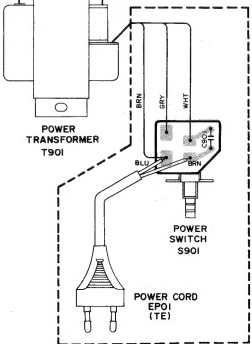


REC PAUSE



POWER SWITCH S901

POWER CORD EPO (TU)



POWER TRANSFORMER T901

POWER CORD EPI (TE)

MAIN P.C.Board 0603, 604

|     | Others |
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0605 ~ 612, 0615, 616

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0617

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0618

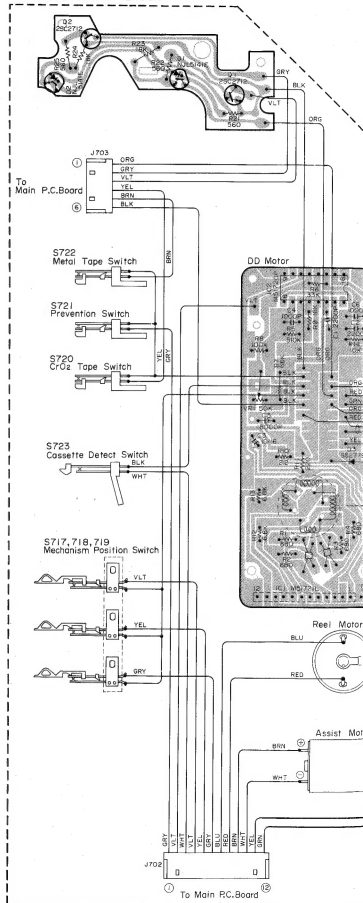
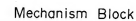
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To Main PC Board [3]

Assist Mot



